The Iron Age

A Review of the Hardware and Metal Trades

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The New Iron Dome on the Williamsburgh Savings Bank.

This structure, which is now building under the supervision of Messrs. J. B. & J. M. Cornell, of this city, promises to be a very beautiful example of ornamental iron construction. The plan of the building proper is a parallelogram, but the dome, which is circular, is placed over the center of the building. The facade of the bank is of stone, handsomely ornamented, and the iron construction is within the exterior walls of the structure.

As the interior construction is viewed from the bank floor it presents the following appearance: Starting from the level of this floor, and extending upward for 26 feet, the architecture is of the Corinthian order. This is surmounted by an arch, the springing line of which is on each side of the building. The extrados of the arch reaches the level from which the dome begins. At a hight of 56 feet above the bank floor there is a very elaborate cast iron cornice, the largest and most ornamental in the country. The hight of this entablature is 12 feet, and it is provided at the top with brackets and lamps for illuminating the interior of the building. At the base of the entablature is the line from which begin the columns which sustain the colonnade. They rest on cast iron plates bolted together so as to constitute one continuous annular plate around the dome. This section of columns is covered within and without with ornamented cast iron plates. By such a means an air of finish is imparted to this portion of the construction. These columns reach to the line of the roof, and are surmounted by another section of columns which extend to the colonnade proper. Between the columns of this second section are Louvre windows of elliptical form, 7 feet 6 inches high by 5 feet in width. The colonnade is 22 feet in hight, and the diameter of the circle which circumscribes its base is 60 feet. The top of the colonnade, which is finished with a perfect entablature, is the base, or springing line, of the dome. At this point there is a connecting plate continuing around the entire top of the colonnade, forming a base for the construction of the dome. This plate is 1½ inches thick and 3 feet 6 inches wide.

The ribs of the external surface of the dome are rolled wrought iron deck beams of 10 inches web and 6 inch flange. This is the first instance in which deck beams have been used for dome construction, as it has generally been thought that they could not be easily bent. In this case, however, no difficulty was experienced. The smaller beams were curved while hot, at Cornell's shop, and the larger ones at the rolling mill. Horizontal angle iron purlins are attached to the ribs, and on these is placed a covering of slate. The highest portion of this surface is 40 feet above the plane of the springing line. The internal surface or ceiling of the dome is much below the outer surface, and is also built of curved deck beams, the radius of the curve being 32 feet. The beams in this case are smaller, and the surface is connected with the upper one by means of tie rods, struts, etc. The space between the ribs of the ceiling is to be filled in with hollow brick and plaster. The crown of the dome is to be very elaborately decorated on the exterior with festoons of drapery, and above the dome is a gallery provided with a railing. The dome is finally surmounted by a lantern, whose hight, from its base to top of spire, is 36 feet, and width 11 feet 8 inches.

From the pavement to the top of the lantern the hight is 163 feet 4½ inches. From the top of the attic finish of the main building to the top of the lantern the distance is 94 feet. The architect is Mr. George B. Post, and the plans and work have been directed by Mr. G. T. Powell, superintendent of the construction department of Cornell's iron works.

We add a few statistics concerning domes which will be found interesting. The hight of St. Paul's dome, London, from the pavement to the top of the cross, is 360 feet. The dome of the Hotel des Invalides, in Paris, is 292 feet high. It is gilded, and is one of the most magnificent specimens of architecture in the world. It is ornamented on its exterior with zinc and copper decorations. The dome of St. Peter's is 200 feet in diameter, and is 400 feet in hight from the pavement to the base of the lantern. The dome of the capitol at Washington is 136 feet in external diameter—that is, measuring from the circle which circumscribes the colonnade. Its interior diameter is 94 feet 8 inches, and there is a passage-way between the external and internal periphery of the gallery on which the columns rest. From the pavement to the base of the old dome the distance is 75 feet, and from this point the hight of the iron portion to the top of the lantern of the present dome it is 216 feet.

One of the finest examples of light iron construction in this country was the dome of the New York Crystal Palace. From the floor to the springing line of the dome the hight was 71 feet. The dome rested on twenty-four columns, and the circumscribing circle of the octagon, which was the shape of the dome, was 100 feet in diameter. This dome was raised in four and one-half working days from the time the materials were on the ground, by a gang of one hundred and fifty men. The hight of the dome was 64 feet, and the total hight of the structure 135 feet.

The iron dome which has been designed for the new city hall of New York, has an inside diameter of 72 feet, and an outside diameter of 88 feet. Its hight from pavement to the top of the lantern is 208 feet. This dome is to consist of a collonnade surmounted with an attic ornamented with buttress and finial decorations and circular windows. The top of the done is finished with a gallery and lanterns, to which access is gained by means of a stairway within the dome.

WILLIAMSBURGH SAVINGS BANK.

The changes which are being made in the Marquette and Pacific Furnace, at Marquette, Mich., are equivalent to the construction of a new furnace. The stack is an iron shell 60 feet high with 15 foot boshes. All the appliances and auxiliaries are of first-class order, and the furnace when completed will rank number one in every particular.

Nickel and Cobalt and their Uses.

Nickel and cobalt ores are usually associated with each other, and both nickel and cobalt are now very valuable in the arts, and used in considerable quantities; yet comparatively but little is known of the precise details of the processes carried on in the refineries, owing to each refiner preferring to confine his attention to a particular class of ore (frequently an ore which, from its peculiarity, is not easily treated by the ordinary smelter, and can, therefore, be purchased cheaply), and keep his process secret. With regard to the ores of Cornwall and Devon, they are seldom found to contain more than from 2 to 7 per cent. of available metallic matter, whilst, from some of the Continental ores as much as 12 or 14 per cent. can be relied upon. In the German ore, moreover, the metallic ingredients are often of a more fusible character, so that when heated in the reverberatory furnace the earthy and metallic elements readily separate, the siliceous gangue with but little metal in it, except oxide of iron, rising to the top, and leaving a metallic compound of arsenic, cobalt, nickel, &c., beneath. This latter, when carefully roasted in an oxiding furnace, in contact with sand or ground flint, affords at once an impure silicate of cobalt, and arsenide of nickel, both of which are marketable products.

The beautiful pigments into the composition of which cobalt enters are familiar to most persons—cobalt-ultramarine, cæruleum, and cobalt green being especially brilliant. Cobalt ultramarine, or Thenard's blue, consists of alumina and protoxide of cobalt. The pigment is prepared either by mixing solutions of alum and a salt of protoxide of cobalt, precipitating the mixture by a solution of carbonate of soda, or by the decomposition of aluminate of soda by the means of chloride of cobalt. The resulting precipitate, consisting of an intimate mixture of hydrate of alumina and hydrate of protoxide of cobalt, is well washed, then dried, and heated for some time. This pigment when pulverized is very similar to ultramarine by day light, but is a dirty violet by artificial light. It is, however, not acted upon by acids, as distinguished from artificial ultramarine; neither is it affected by alkalies, as is copper or mineral blue; the Thenard's blue is chiefly used in oil and water painting, and for staining glass an porcelain. Cæruleum, which exhibits a bright blue color, not changing in artificial light, consists of stannate of protoxide of cobalt, mixed in certain proportions with stannic acid and gypsum, and is not affected by heat, or the action of dilute acids or alkalies. In his translation of Wagner's "Chemical Technology," whence these details are taken, Mr. Crookes, F. R. S., gives the exact proportions, but in an article intended for general readers it is unnecessary to repeat them. Cobalt green, which is also known as zinc green and Saxony green, is a compound similar to the cobalt ultramarine, but oxide of zinc is substituted for the alumina. This green is prepared by mixing a solution of white vitriol with a solution of a salt of protoxide of cobalt, precipitating by carbonate of soda, and washing, drying, and heating the precipitate. This pigment, when pure, contains 88 per cent. of oxide of zinc and 12 per cent. of protoxide of cobalt; it is not affected by strong heat. The cobalt yellow is obtained by mixing a solution of protoxide of cobalt with nitrate of potassa; it is a yellow crystalline precipitate, perfectly insoluble in water. According to Hays, this pigment is readily obtained by causing the vapors of hyponitric acid to pass into a solution of protonitrate of cobalt, to which some potassa has been added. The whole of the cobalt is then converted into cobalt yellow. As the nitrate of protoxide of cobalt and potassa can be obtained even from impure solutions of protoxide of cobalt, so as to be quite free from any nickel, iron, etc., the use of this preparation of cobalt is preferable for glass and porcelain staining when a pure blue is required. Cobalt bronze, a double salt of phosphate of protoxide of cobalt and ammonia, has likewise lately been brought into commerce; it is a violet colored powder, exhibiting a strong metallic lustre.

In the extraction of cobalt, then, we see that it is a chemical process that is usually involved, bu[illegible] extraction of nickel is more directly m[illegible]ical. Occasionally true nickel ores are [illegible], as in the case of Rewdanskite, found in the Ural Mountains, in Russia, but it is chiefly extracted from ores which contain it accidentally, such as certain species of iron and copper pyrites, the Mansfeldt ores, and others. An iron ore, found at Pragaten, in the Austrian Tyrol, has been profitably worked, although containing but 1·76 per cent. of nickel; yet, it is seen that in this country even 3·50 per cent. has been neglected. It very rarely happens that even the natural ores of nickel are sufficiently pure to admit of the direct extraction of the metal, and therefore, as is the case with copper, a preliminary operation is required, which aims at the concentration of the metal, either with sulphur when the combined substance is termed regulus, or with arsenic when it is called speiss, and it is one or other of these forms that the miners would in all probability find to be of the greatest possible advantage to bring the nickel into the market. One of the best authorities upon matters of this nature suggests that oxide of iron would probably be found the most suitable flux for using with the Cornish ores containing nickel and cobalt, and he considers that by this means a manufacturer accustomed to furnace operations would probably be enabled to send into the market an arsenical compound containing more than 50 per cent of the nickel. In the subsequent process, the powdered speiss is roasted to expel the arsenic, first by itself and next with the addition of charcoal powder, till the garlic smell be no longer perceived. The residuum is mixed with three parts of sulphur and one of potash, melted in a crucible at a gentle heat, and the product being edulcorated with water leaves a powder of metallic lustre, which is a sulphide of nickel free from arsenic, while the arsenic associated with the sulphur and combined with the resulting sulphide of potassium remains dissolved. Should arsenic still be found in the sulphide, as may happen if the first roasting heat were too great, the process is repeated.

Pure nickel has a nearly silver white color, with a slightly yellowish line, is very difficult to melt, rather hard, very ductile, and easily polished. When quite pure it may be drawn into wire, rolled into sheets, hammered, and forged; and in combination with copper and zinc in varying proportions gives the beautiful silver-like alloys so familiar to many as German silver, although called by various names, according to the caprice of the manufacturer. The great necessity for the removal of the arsenic arises from the fact that if any be allowed to remain the nickeliferous alloys speedily turn brown upon exposure to the air, yet want of whiteness must not always be attributed to the presence of arsenic, for but very little variation in the proportions of the metals forming the alloy will change it from one scarcely distinguishable by the eye from silver to a comparatively worthless one; and, indeed, the difference seems to depend sometimes upon mere difference in the method of mixing. Thus the fine argentine plate and the oriental packfong, which is little better in appearance than pewter, are each described as consisting of—copper, 8 parts; nickel, 3 parts; and zinc, 3 parts. When the proportion of nickel is increased, the alloy is much harder and more difficult to work, whilst the color is not materially improved; and when the proportion is much diminished, the color is usually deteriorated; yet one manufacturer employing copper, 60·0; zinc, 17·0; and nickel, 22·5, succeeds in producing a very fine alloy.

Metals.

Metals.

Metals.

Wire, etc.

Wire, etc.

Bayliss' Vertical Hot Blast and Water Tuyere.

Probably no portion of the machinery of the smith's shop has been experimented upon so much as the tuyere. Thirty-five or forty years ago anything with a hole in it sufficiently large to admit a current of air was considered good enough; but experience has taught that in this item, at least, the cheapest is not always the best. The changing of the horizontal blast to a vertical one was one of the most radical alterations made in the art of smithing. The change was made by a German named Auerbach, for which he received "letters patent" about 30 or more years ago. The affair consisted of an oval pot attached to a square bed or top plate, the bed plate being so fitted as to take, with an oval opening, a triangular elongated ball, which was secured by a shaft passing through its center, the shaft being secured in position by means of a securing plate and its two journals, the shaft extending to the outer side of the forge, the end of the shaft being squared and fitted with a crank. By means of the crank the ball was caused to revolve, and in such revolution crushed all the slag or cinder that happened to be in or near the oval opening, allowing the same to drop into the pot or receptacle below. The blast, as with all tuyeres of a former or present date, entered the tuyere horizontally, broke against the walls of the pot, and ascended vertically through the oval opening, the inventor claiming that, by reason of the space or the greatness of the area of the pot, which soon became warm, the increase of the bulk or volume of the air by means of expansion more than compensated for what was lost by means of the air colliding with the walls of the pot. To remove the slag the pot was fitted with a sliding valve at the bottom, which could be removed at pleasure, allowing the crushed slag and other impurities to fall out. This bottom valve has been a stumbling block to many inventors of tuyeres, and many are the methods which have been resorted to to get around the same without infringement upon Auerbach's patents.

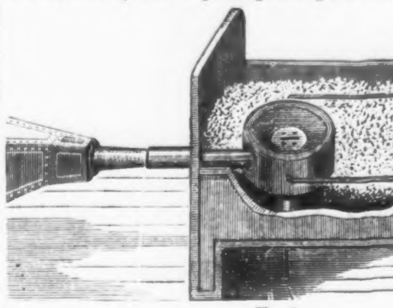


Fig 1

Since the invention of Mr. Auerbach, many others have been introduced, all claiming a superiority, and each one having a peculiar feature upon which its inventor claims that it should precede all others in existence. Among the most generally satisfactory of the improved tuyeres is that invented by Mr. John Bayliss, shown in the accompanying illustrations.

Fig. 1 represents a small forge with horizontal tuyere, and Fig. 2 the vertical or bottom blast tuyere.

Instead of the blast passing into the fire cold, as in the ordinary tuyere, it passes through pipe A (Fig. 2), and takes a circle of the air chamber B, and enters the fire at a temperature of 300°, through nozzle C—a hollow casting which is filled with water from an iron tank F by pipe D. The steam generated in the nozzle, is conveyed back to the tank by pipe E. It will be seen that the water protects the nozzle from burning, also from choking up while a hot blast is passing through it. The saving of time and fuel is considerable, while its durability—which has been thoroughly proved—equals its economy. For welding purposes it is especially commended, from the uniformity, clearness and softness of the heats, the rapidity and ease with which they are obtained, and the perfection of the work produced.

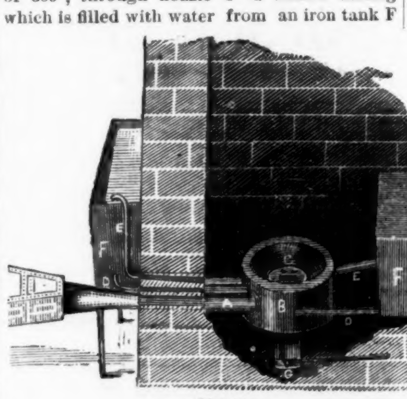


Fig. 2.

After a large heat, lift the lever attached to valve G, to allow the dust and slag to fall out. There are two ways to set these tuyeres: First, to the right of the cut is tank F, firmly attached to the pipes D and E; this tank is built in the hearth with the tuyere; set this tank level with the top of the forge; this tank being built in the forge, the most severe weather cannot freeze the water in it. Secondly, the cut explains how to set this tuyere: the pipes are screwed into their places after the tuyere is set level and about four inches from the nozzle to the level of the forge, if for heavy work five inches, then build up with mortar or clay. These tuyeres can be placed in any forge of iron or brick in from one to two hours.

The inventor claims for this tuyere a considerable increase in the volume of air by expansion, also the ability to increase or diminish the blast at pleasure. The object of the employment of water is that the circulation of water in close proximity with the upper surface of the tuyere keeps the same cool, and prevents the adhesion of slag while in a liquid state to the surface of the tuyere, and allowing of the easy removal of the same upon its becoming solid when coming in contact with the cool outer surface of the tuyere. He also claims that the slight exhaustion of steam generated by means of the water passing through the tuyere has the effect of neutralizing the sulphuric acid gas or sulphuretted hydrogen, causing the same to pass off harmless.

This tuyere is adopted in a large number of our principal establishments using forges, and gives satisfactory results.

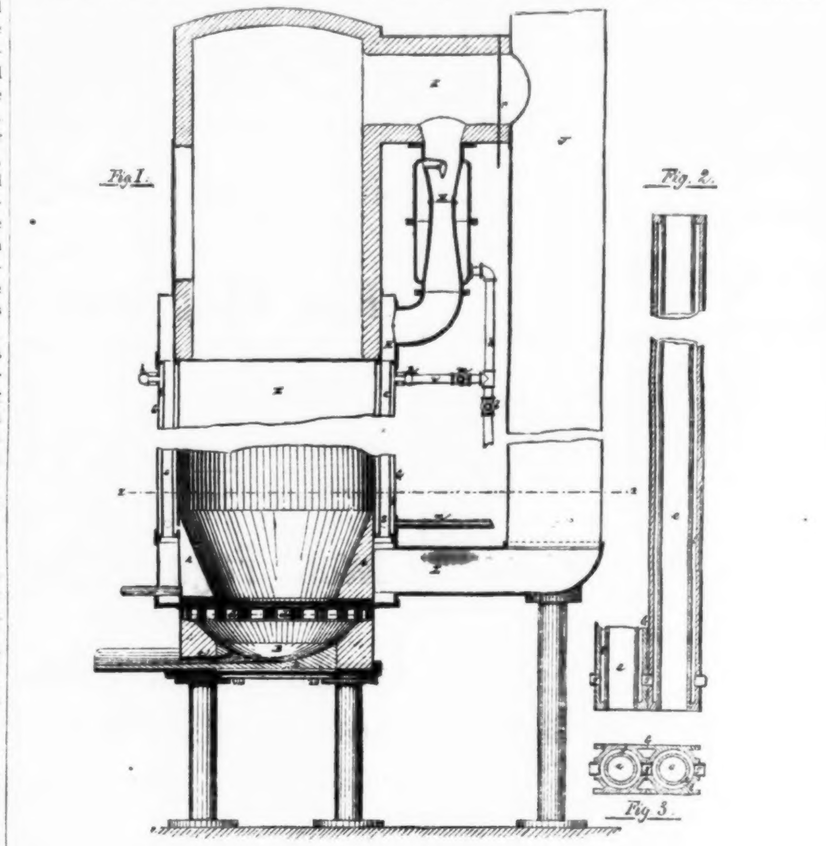
New Patents.

We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN CUPOLA FURNACES.

Specification forming part of Letters Patent No. 138,510, dated May 6, 1873, issued to Philip W. Mackenzie, of Blauveltville, New York.

Figure 1 represents a sectional elevation of a cupola furnace with invention applied to it; Fig. 2, a vertical section, upon a larger scale, of two adjacent sections, in part, of a steam generator used in and forming part of the invention; Fig. 3, a horizontal or transverse section of the same; Fig. 4, a section at the line, *x x*.



IMPROVED CUPOLA FURNACE.

Similar letters of reference indicate corresponding parts throughout the several figures of the drawing.

This invention is mainly designed for the smelting of the precious metals, such as gold and silver; but it is also applicable to inferior metals, and may be used in cupolas for smelting iron ore. It consists in a combination, with the smelting furnace, of a steam generator, heated by said furnace and by gases passing therefrom, and a steam injector deriving its supply of steam from said generator and jetting it into a draft flue or flues connected with the chimney or main outlet for the escaping products of combustion, whereby the products of combustion are made to maintain the blast of the furnace. It also consists in certain peculiarities of construction and combinations or arrangements of parts, whereby the above result is obtained in a most perfect and advantageous manner, and great convenience is afforded for fitting the whole together, as also for repairs, when necessary, and for starting or operating the furnace under different conditions of its draft.

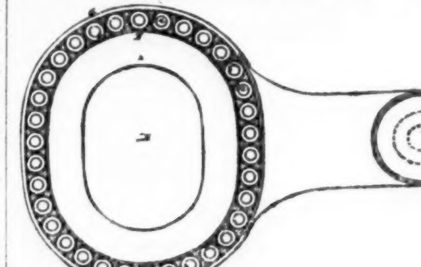


Fig. 4.

A represents the bosh of the furnace, which may either be of brick, as shown at the right-hand side of Fig. 1; or may be of a hollow metal construction to contain water, as shown at the left hand of said figure. When a water-bosh is used, then the feed-water to the steam generator G, designed to be heated by the furnace, may be introduced through said bosh by a pipe, *b*, and the bosh connect at its top with the lower portion of the water-space of the generator. B is the bowl of the furnace, having a tap-spout, *c*; C, the bed brick; D, the sand hearth; and *d d*, the air-openings, by which the furnace is supplied with air. E is the lower, and F the upper, portion of the body of the furnace, both of which, if desired, may be lined with brick, but the lower portion of which is here represented as not having its shell lined. The steam generator G is arranged to surround the lower portion E of the body, and, as shown in the drawings, is composed of a number of vertical sections of polygonal shape in their transverse section, so as to form a compact body around the furnace, and having tubular flues *e* and surrounding annular water-spaces *f* through them, the latter connecting with each other near their base by thimbles *g*, as shown in Fig. 2 and 3, and said annular spaces connecting near their tops by branches with a surrounding steam-belt, *h*, from which the injector H draws its supply by a pipe or pipes, *i k*, from which steam may be taken by a branch or extension of the pipe *k* to drive an engine, or for any other purpose that steam may be required. The pipe *k* may also be used, on opening a cock, *l*, to supply the injector with steam from an independent steam boiler for the purpose of starting the furnace, during which a cock, *m*, in the pipe *i* should be closed; but after steam of the necessary pressure is formed in the generator G, then the cock *m* is opened, and the cock *l* may be closed. When the generator G is not connected with a water-bosh, then the water may be fed to it by a pipe, *n*.

The hereinbefore described construction of the generator G is a very advantageous one, not only on account of the convenience with which the generator may be erected around the body of the furnace, and its sections be removed or replaced, when required, but also on account of the facility which it affords for a downward draft of heated gases from the furnace through it, and so that the generator is heated, not merely by its contact with or proximity to the lower portion of the body of furnace, but also by the escaping products of combustion passing through it. Thus the products of combustion may either pass—that is, when a natural draft is required—direct from the top of the cupola, which is covered, by or through a main upper outlet, I, to the chimney J on opening a damper, *r*; or said products may be forced to pass through the injector H down into a box, K, with which the flues *e* connect at their top, and from thence down through said flues to a lower box, from which is an outlet, L, that connects with the chimney J below. This draft is quickened by the steam-injector H to produce the necessary blast to the furnace; and, as said injector is supplied with steam from the generator G, the furnace is accordingly made to maintain its own blast. Said injector, of which *s* is the nozzle, may be constructed with an outer drying case or shell for the steam, and inner reversely tapering body.

Claim—1. The combination, with a steam generator heated by a reducing furnace, of a steam-injector deriving its supply of steam directly from said generator, and operating to pass the products of combustion of said furnace through the generator, and thence to the chimney or main outlet.

2. The steam generator G made up of vertical sections arranged to form a jacket on the outside of the shell of the furnace, and provided with draft-flues *e* and water-spaces *f*, in combination with an upper outlet, I, from the furnace, a steam injector, H, a lower escape passage outlet, L, the chimney J, and a lower airsupply opening or openings, *d*, essentially as shown and described.

The Taunton (Mass.) Locomotive Manufacturing Co. has recently finished a very handsome locomotive of 17 tons, 16-inch cylinders and 24-inch stroke, for the Bridgewater Iron Company, to be used in their yard for the special service of transferring their freight to and from the main track of the Old Colony Railroad. The iron company has just completed two new stacks in connection with the addition to their rolling mill, and the entire addition will be eight new furnaces.

The Johnstown (Pa.) Steel Works recently made 810 tons of steel blooms in one week.

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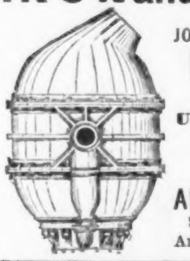

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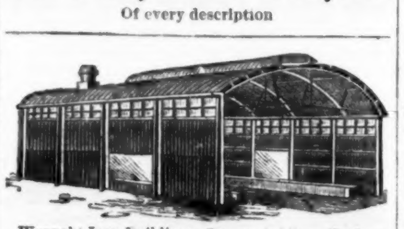

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On the Molecular Changes Produced in Iron by Variations of Temperature.

BY PROFESSOR R. H. THURSTON.

(Concluded.)

60. Reviewing the whole ground, it becomes evident that there still remains much interesting work to be done in determining the precise effects of variation of temperature upon the strength and ductility of the various metals, and, particularly, in ascertaining the modifications of the general law, which may be due to differences in physical and chemical structure, where they are combined with the metalloids, or united as alloys.

Some of those effects which have been attributed to changes of tenacity in the material may have been due, in some degree, to unequal expansion or contraction. It can hardly be doubted that such action often modifies, or even disguises, the change in character produced by real changes of intermolecular forces. It is certainly the fact that changes of molecular arrangement sometimes occur very slowly.

Ordnance of cast iron has been found to gain strength slowly, but probably steadily, for years after its removal from the foundry; the familiar belief that razors, out of use, recover the cutting quality lost by constant employment, may probably be founded on fact, and the writer has often noticed that cold chisels and similar tools, when found after long disuse and exposure to the weather, seem to have regained the strength and endurance of edge, the loss of which had probably caused the workman to throw them aside.

If this be the case, a sudden alteration of structure, such as may be produced by considerable changes of temperature, may cause a change of quality, which only a long period of time may counteract. Such action would evidently be most marked with brittle, and least noticeable with ductile, metals, and the fact is further illustrated by the circumstance that *iron* castings, not infrequently, are broken while cooling after removal from the mold, while *bronze* castings are very rarely thus injured.

61. It seems, finally, very probable that additional investigation will be found to confirm our deductions from experiments already made, and will justify the following

CONCLUSIONS:

1. That the number and the nature of those molecular forces which determine the physical condition of matter are not yet fully ascertained, but that these forces manifest themselves in, at least, three distinct modes of action, and, as thus exhibited, they are known as repulsion, cohesion, and polarity.

2. That the force of repulsion is, apparently, heat-motion, or some closely related phase of energy; that the force of cohesion bears some resemblance to that of gravitation, but seems not to be identical with the latter, and that the force of molecular polarity, which determines the molecular relations of position, seems to bear some distant resemblance to that of magnetic polarity.

3. That the law which governs the variation in intensity of these forces with changes of intermolecular distances, is undetermined, and that it has not been expressed by any mathematical formula, except approximately and for a limited range.

4. That the magnitudes of the intermolecular spaces, and, consequently, the volume of any mass, are variable with changes in the relative magnitudes of the forces of cohesion and repulsion.

5. That the resistance offered to change of form is determined by the relations, in intensity, of the forces of polarity, and of those forces which determine intermolecular distances.

6. That, at the "absolute zero" (—461·2 Fahr.), cohesion and polarity, and, consequently, the strength of the material, have their maximum value, heat energy having disappeared.

7. That, at very high temperatures, heat energy exerts a separating force between particles, which entirely overcomes the other forces, and matter assuming the gaseous state requires the action of extraneous force to preserve its volume unchanged.

8. That, at intermediate points, matter in either the solid or the liquid state exhibits a definite degree of separation of molecules, which is determined by the intensity of the repulsion due to heat motion, a position of equilibrium being assumed which, with the same substance, is invariable for the same temperature. The application of some kind of force is required to disturb this equilibrium and to produce change of volume. The amount of this force is determined, for any given extent of disturbance, by the maximum value of cohesion for the substance and the quantity of heat which has been required to raise it from the absolute zero of temperature. The sum of the applied force, and of the force consequent upon the presence of heat motion, must exceed cohesive force to produce dilatation, while this cohesive force, added to the externally applied force, must exceed the force of repulsion to produce diminution of volume.

9. That the distinction between the solid and liquid states of matter is due to the action, in the former, of the force of polarity, which gives stability of form, while in the latter this force is extremely feeble, and disappears altogether before the boundary line between the liquid and gaseous states is reached.

That combined stability and elasticity of volume may be produced by the equilibrium of attractive and repulsive forces, but that stability and elasticity of form demand the coexistence of cohesion and polarity.

10. That the general effect of increase or decrease of temperature is, in solid bodies, to decrease or increase their power of resistance to rupture, or to change of form, and their capability of sustaining "dead" loads.

11. That the general effect of change of temperature is to produce change of ductility, and, consequently, change of resilience and power of resisting shocks and of carrying "live" loads. This change is opposite in direction and, usually, greater in degree, than the variation simultaneously occurring in tenacity.

12. That marked exceptions to this general law have been noted, but that it seems invariably the fact that wherever an exception is observed in the effect upon tenacity, an exception also may be detected in the effect upon resilience. Those causes which produce increase of strength appear always to cause a simultaneous decrease of ductility, and *vice versa*.

13. That experiments upon copper, so far as they have been carried, indicate that, with that metal, the general law holds good.

14. That iron exhibits marked deviations from the law, between ordinary temperatures and a point somewhere between 500° and 600° Fahr., the strength increasing between these limits to the extent of about 15 per cent., with good iron. That this variation becomes more marked and the observed effects are more irregular as the metal is more impure.

15. That, above 600°, and, at temperatures below 70° Fahr., the general law holds good with iron, its tenacity increasing with diminishing temperature below the latter point, at the rate of from about 0·02 per cent. to 0·03 per cent., for each degree Fahrenheit, while its resilience decreases in a much higher but not well determined ratio for good iron, and to the extent of reduction to one-third its ordinary value or less, at 10° Fahr., when "cold short," and, in the latter case, the set before fracture may be less than one-fourth that noted at a temperature of 84° Fahr.

16. That the viscosity, ductility and resilience of metals are determined by identical conditions, and that the fracture of iron at low temperatures has, accordingly, been found to be characteristic of a brittle material, while, at higher temperatures, it exhibits the appearance peculiar to ductile and somewhat viscous substances. The metal breaks, in the first case, with slight permanent set and a short, granular, fracture, and in the latter with, frequently, a considerable set and the form of fracture indicating great ductility. The variation in the behavior of iron, as it approaches the welding heat, illustrates the latter condition in the most complete manner.

17. That the precise action of the elements with which iron is liable to be contaminated, and the extent to which they modify its behavior under varying temperatures, remain to be fully investigated, but that the presence of phosphorus, and of other substances producing "cold shortness," exaggerates to a great degree the effects of low temperature in causing loss of toughness and resilience.

18. That the modifications of the general law with other metals than iron and copper, and in the case of alloys, have not been studied, and are entirely unknown.

19. That these conclusions are sustained by experiments of both physicists and engineers.

The practical result of the whole investigation is that iron and copper, and probably other metals, do not lose their power of sustaining "dead" loads at low temperatures, but that they do lose, to a very serious extent, their power of sustaining shocks or resisting sharp blows, and that the factor of safety in structures need not be increased in the former case, where exposure to severe cold is apprehended, but that machinery, rails, and other constructions which are to resist shocks, should have large factors of safety, and should be most carefully protected, if possible, from extremes of temperature.

It will be noticed that nothing in the evidence here quoted indicates crystalization or any change of molecular grouping to be consequent upon simple change of temperature.*

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* It is intended to consider this subject in a succeeding paper.

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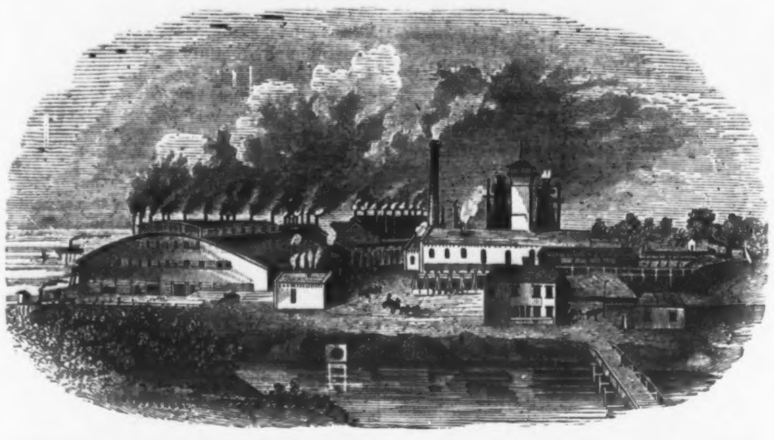

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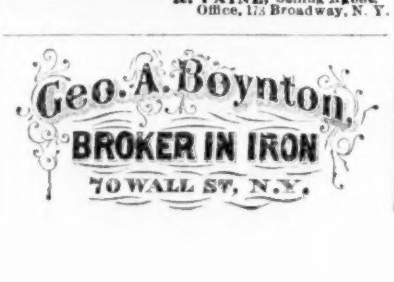

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Plans, Drawings, and Specifications promptly furnished.
IRON FOUNDERS.
CAST IRON STREET MAINS, for Water and Gas, from One and a Half Inches to
FORTY-EIGHT Inches in Diameter,
Stop Valves (all sizes), FIRE HYDRANTS, HEATING PIPES, BRANCHES, BENDS, TEES
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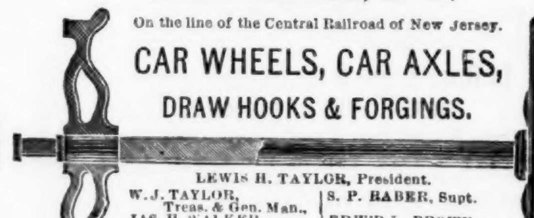
WHEELS AND AXLES made in the best and most careful manner, furnished separately, or fitted, making complete sets.
STANDARD DRAW HOOKS, finished, ready for immediate use, with nuts and plates, with or without links.



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PROPRIETORS OF THE
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Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their Iron from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to produce
RAILROAD IRON
Of uniform quality, unsurpassed for strength and wear, and of any required length.
Address the Proprietors Pottsville, Pa.

The Britannia Ironworks Company, Limited,
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ALL DESCRIPTIONS OF IRON RAILS
Surplus Stocks of Various Sections always on hand.
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THE NICHOLSON FILE.

All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformityof machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "*Increment File*" is not an experiment, but an established fact, and already has acquired a legitimate demand for upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

Prices and terms will be forwarded on application to

NICHOLSON FILE COMPANY,
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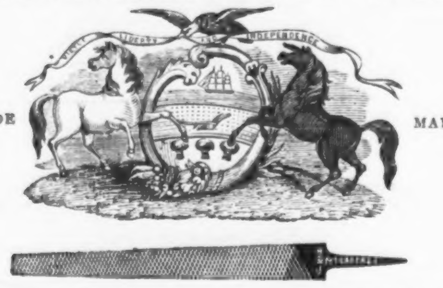
TRADE  MARK

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Manufacturers of FIRST QUALITY FILES and RASPS ONLY,
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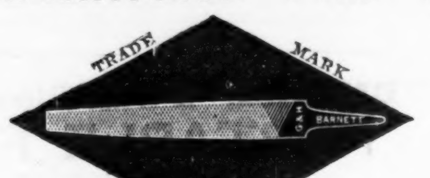

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Stubs' Steel Wire, Files and Tools,
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Steel Wire for Sewing Machine Needles and for other Purposes,
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Sizes, 22 to 36 Gauge.
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For Hatters' and Machinists' Use.

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Small Brass and Iron Castings made to order.
64 Duane Street, NEW YORK.

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Manufacturers of
REAL BRONZE
Door Knobs,
ORNAMENTAL BRONZE FRONT
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Manufacturers of
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A large stock and good assortment on hand. Orders solicited from store and for importation

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Springfield, Mass.,
SOLE AGENTS
FOR THE UNITED STATES.

Putnam's Government Standard
FORGED
HORSE SHOE NAILS.

Manufactured from the best of NORWAY Iron, and warranted to give entire satisfaction.

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G. W. Bradley's Edge Tools.

Butchers' Cleavers,	Axes and Hatchets,
Bush Hooks, all patterns,	Grub, Garden & Planters' Hoes,
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Coopers' Tools, a specialty,	Box Scrapers & Chisels,
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Give special attention to securing American and Foreign Patents for Inventors, Reissues and Extensions of Patents; also, to the taking up and prosecuting of Rejected Cases, Interferences, Infringements, Appeals, etc

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Coes & Taft's Pat. Wrenches.	Mouse Traps. Wire Seives.	Yaw's Cow Bells.
Axe, Pick, Sledge & Hammer Handles.	Scale Beams.	Axes, Picks and Hatchets.
Hatchet, Auger, Chisel & File Handles.	Patent Tap Borers.	Hammers. Crow Bars.
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E. C. MERRILL, West Charleston, Vt.

Patentee and Manufacturer of the **Cosmopolitan Solid Emery Wheels.**
Saw Gummers, Artificial Stone for Building and Ornamental Purposes,
Diamond Turning Tools, Emery Wheel Machinery, &c.

OFFICES. { **Boston, 114 & 116 Elliot Street.**
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A complete assortment of sizes, grades, &c., constantly on hand. The **Cosmopolitan Emery Wheels** have taken the Highest Awards at every Fair where they have been exhibited, viz.: N. Y. Institute, 1872; New England Agricultural and Mechanical Fairs, held at Lowell, Mass., and the Vermont State Fairs for the past two years.
Send for Prices. A liberal discount made to the trade.

Something New for

OTIS FURNACES & MINES.

New Union Steam Safety Elevator,

How One Works.

RIVERSIDE IRON WORKS, DEWEY, VANCE & Co.,
Wheeling, W. Va., January 14th, 1873.

Messrs. OTIS BROTHERS & Co., New York.

Dear Sirs: The experience of a year proves that ***your Furnace Elevator is superior to all others in use.*** We have in the six weeks from December 1st to Sunday last, 12th inst., made ***9724 tons, 1401 lbs. Pig Metal,*** or an average of near ***65 tons per day,*** which required the elevator to ***lift 72 feet high*** 4¼ tons Ore, Coke and Limestone for each ton of metal produced, ***or more than 11,500 tons material in the 6 weeks.*** The largest yield in ***one*** day was ***81 1-4 tons*** Iron, involving the lifting of ***345 tons*** material ***in 24 hours.*** This has all been done to ***our satisfaction,*** and that, too, in the ***coldest weather we have had.*** Other furnaces with ***water*** and ***pneumatic hoists*** have experienced ***great difficulty,*** on account of the ***water freezing*** in the ***tanks;*** and in the case of the ***air*** hoists, we understand that two furnaces, not far from us, ***had*** to "***blow out,***" from being ***unable to hoist stock*** during the "***cold snap.***" The difficulty, we are told, was caused by the ***condensed moisture*** in the ***blast freezing to the sides of the cylinders,*** so that the ***piston could not move*** up or down.

Very truly, yours, DEWEY, VANCE & Co.

Send for Circular to

OTIS BROTHERS & CO.,
348 Broadway, NEW YORK.

BUSINESS ITEMS.

PENNSYLVANIA.

The Thomas Iron Company, at Hokendauqua, has added to their machine shop three lately improved machines, consisting of a slide screw cutter lathe, slotter, and drilling machines. They were manufactured by the New York Steam Engine Co., and are of the finest pattern and finish, and will greatly facilitate work in their shops.

The Glen Iron Company received an order a few days ago for 55 tons (six car loads) of T rails, for a street railroad to be laid in Salt Lake City, Utah Territory.

The Vallentine Iron Company, of Williamsport (late of Bellefonte), have broken ground and expect to be in operation in three months. The mill will be modern in all its parts. Those having it in charge are practical, and men of large means. The location was selected because of the large amount of refuse lumber coming from the saw mills at that point, which they expect to be able to utilize in making their charcoal. In the manufacture of a superior quality of boiler plate this is an important item, and if they succeed in cheapening the cost of charcoal it will give them advantages that can hardly be overestimated. They are putting in one of the largest steam hammers in that part of the State. Marchand & Morgan, of Alliance, O., have the order.

Freeman & Burgher's Tube Works, at Pittsburgh, were burned June 13. Loss, \$25,000; insurance, \$12,000. The Keystone Bridge Company's fitting shed was also destroyed. Loss, \$2000; fully insured.

DELAWARE.

Mr. Schoen, of the Delaware Spring Works, Wilmington, is turning out a large number of both elliptic and coil springs, which are being used under Pullman's palace cars built there, beside being shipped to all parts of the country. Mr. Schoen is also the sole manufacturer of Smythe's self-adjusting sleeping car spring, and manufactures spiral and volute buffers.

The Wilmington *Gazette* says: Messrs. Brand & Hooper, of Baltimore, are erecting a building in which to manufacture carriage axles, on East Front street, near the railroad, in the rear of Pennington, Bayley & Co.'s machine shop. They have the machinery ready to put up, which cuts the axles from the iron, instead of working them out by lathes and planers, as is done by the present method. They will soon begin operations.

The Messrs. Townsend have commenced the erection of a new rolling mill in Wilmington. It will be somewhat larger than the one they at present carry on, and will give employment to 100 hands.

CONNECTICUT.

The H. B. Bigelow Iron Works, in New Haven, were totally destroyed by fire, June 15, the loss being \$100,000, and the insurance \$63,000. About 50 men were thrown out of employment

MASSACHUSETTS.

Among the many enterprises which have been developed in Springfield within the past two years, are the works of the Gilbert & Barker Manufacturing Co., who manufacture the well-known Springfield gas machine. They commenced business in 1867 in a single room, 20x40, and its growth has been so rapid that they now occupy the whole of the three story brick factory at the head of Lyman street, corner of Spring, employing about 35 hands, and producing annually about 200 machines of different sizes, ranging in value from \$300 to \$400 apiece. The consumption of sheet copper is about 30 tons, of solder 4 tons, iron 15 tons, and brass and composition castings 3 tons annually. They also manufacture about 30,000 of Barker's patent adjustable burners, the peculiarity of which is that a large or small light may be obtained without changing the form of the jet. They are specially adapted for burning air gas or carbureted air, and are said to be the only successful burner of the kind ever invented. They also make a specialty of the sale of gasoline of a very choice grade (the material from which gas is made in their machines), their sales reaching nearly 2000 bbls. per year. They have made and sent out, and have now in successful operation, some 600 machines, furnishing gas for tens of thousands of burners, lighting all classes of property, from the largest manufactory to the ordinary dwelling. They are in use in nearly every state in the Union, in Canada, South America, Germany and the West Indies. To such a stage of perfection has their process of lighting been brought that it is recognized as a necessity, and provison is made for its introduction in most of the better class of residences that are beyond the reach of city gas. The principle the company act upon is that the public will appreciate and purchase a first-class article, and therefore copper, the best and most durable of all the metals, is exclusively used in their machines, and the most skillful mechanics are employed, and no pains are spared to make it such. Their success is no doubt due very largely to the superior principles on which they are constructed, and to the simple, safe and convenient manner in which they are erected. The machine itself is a model of simplicity, consisting of an air pump (which is the only part of the machine requiring care, and which, for convenience, is placed within the building, and containing nothing but air and water is perfectly safe) and the generator, which is always placed in a vault 50 feet away from the building beneath the surface of the ground, and once set up does not require over ten minutes time per week; no accident has ever occurred by their use. The demand for them is constantly increasing, and to be seen is to appreciate them. Their New York office is at 238 Canal street, where machine of all sizes can be seen at all times.

By a vote of the Turbine Water Wheel Manufacturing Company, at Orange, the present organization is to be dissolved, and a new company formed under the name of the Chase Turbine Manufacturing Company, with Levi Kilburn, treasurer, and M. E. Griffin, secretary.

The wire mill of the Gosnold Mills corporation, at New Bedford, is having an addition built, 35x65 feet, and the full hight of the present building. The company contemplate changing the machinery, which can be done with little trouble, and adapting it to the manufacture of hoop iron. They have already tried the experiment of making hoop iron with this machinery, and it has proved highly satisfactory.

The patent brick-making machine, of Henery Martin, which has been improved in construction during the past winter, is to be manufactured by the Ames Manufacturing Co., of Chicopee. It is capable of turning out 40,000 bricks per day, if run by steam, and 30,000 if run by horse-power.

The Ames Company will soon complete for Ray & Taylor, of Holyoke, two combination paper collar machines. The collar in passing through this machine is embossed, folded, and button-holes cut, thus accomplishing the work for which three machines have hitherto been required. It is the invention of C. H. Denison, of New York city, and is considered an almost invaluable improvement.

The preparatory steps toward beginning the manufacture of the newly-adopted gun at the Springfield Armory, will be completed in a short time. It is intended, after the work is fairly underway, to turn out 100 guns per day, until the first 30,000 are completed, by which time the whole number to be manufactured will probably be definitely settled.

Lucius W. Pond is the direct successor in the manufacture of machinists' tools to the old firm of Samuel Flag & Sons, the pioneers in this industry in Worcester. The building he occupies is 196x40 feet, three stories high, with a blacksmith shop and pattern shop in the rear. He employs 140 men, and has a 60 horse engine. His specialty is the manufacture of planers, lathes, drills and boring mills. He also makes Holden's patent conductor's punch.

KANSAS.

The improvements at the Parsons Machine Shops go bravely on. The whole 45 acres to be used by the company are now graded. The temporary foundry, 50x100 feet, is completed. It is the intention to erect a fine, cut stone foundry in a few months. Several car loads of slate for roofing the machine shops building have arrived. The roof alone to this structure costs \$35,000. It is the intention to have the machine shops in full operation in July. The machinery cost \$85,000, and the building \$110,000.

MICHIGAN.

The Pioneer Iron Works, at East Saginaw, of which A. F. Bartlett & Co., are proprietors, manufacture steam engines, gang and circular mills, iron and brass cuttings. Their machine shop is 100x50 feet and two stories high; foundry, 50x40 feet; blacksmith shop, 30x40 feet. They use a 25 horse-power engine, and employ 65 hands. The company make a specialty of Stewart's oscillating gangs and mulay saw mills. They have been in operation nineteen years, and gained an excellent reputation for their manufactures.

OHIO.

The new mill of the Etna Iron and Nail Company, of Bridgeport, opposite Wheeling, expect to be in operation inside of 60 days. Their mill will contain a 20-inch sheet mill and 18-inch puddle train, a 16-inch merchant train, and a nine-inch guide train. They will have 12 puddling furnaces, six or seven heating furnaces, and two engines.

The Ohio Iron Company, of Zanesville, have concluded to erect as soon as possible a new complete rolling mill, of about the same capacity as the present one. It will be built on the lot south of the present mill, and will be supplied with the most improved machinery.

Zanesville is to have a plow factory, with a capital of \$88,000.

ILLINOIS.

The Chicago Spring Works last year turned out 500 sets of Daniels' patent springs, and an average of nearly a ton a day of elliptic springs. The company intends shortly to erect new shops at Melrose, near Chicago, on the Chicago & Northern road.

The work of putting up the first arch of the Illinois and St. Louis bridge is going on. The work men commenced putting up the sixth length of steel ribs, or tubes, June 9. The steel work for the first arch is all ready, and the balance is being shipped from Pitttsburgh as fast as possible.

The American Bridge Company, of Chicago, have contracted for the construction of a bridge across the river at Bay City; they will commence operations at once. The bridge is to be 1468 feet long, and will be built with the improved Howe truss.

The Chicago Steam Forge works, owned by Pynchon & Willard, have four steam hammers, and turn out about 40 car-axles a day.

The Illinois Steam Forge Company, in Chicago, have turned out, during the past 18 months 8600 car-axles and 306 tons of heavy forgings. The company has purchased a tract of land at South Chicago, and purpose putting up new works there.

INDIANIA.

The lease held by the Indianapolis Car Works on the present location will expire in September, when the works will be moved to some more favorable locality. It is the intention to erect much larger buildings, and increase the capacity of the establishment in every particular.

The rolling mill at Knightsville is to have an addition.

Steptoe, McFarland & Co., of Cincinnati, manufacturers of wood working machinery, are arranging to start a branch of their works in Indianapolis.

The Cabinet Sewing Machine Works, at Indianapolis, are making additions to their capacity, and when completed the company will increase their force to 250 men.

HENRY DISSTON & SONS'

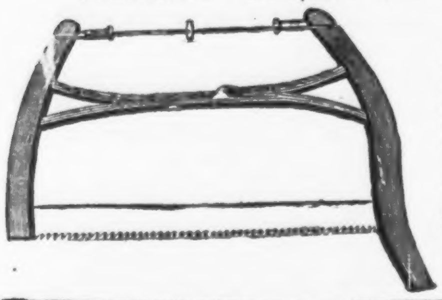
SAW, TOOL,

STEEL AND FILE WORKS,

Front and Laurel Streets,

PHILADELPHIA, PA.

Hankins' Elliptic Forked Saw Frame.



Patented June 28th, 1870.

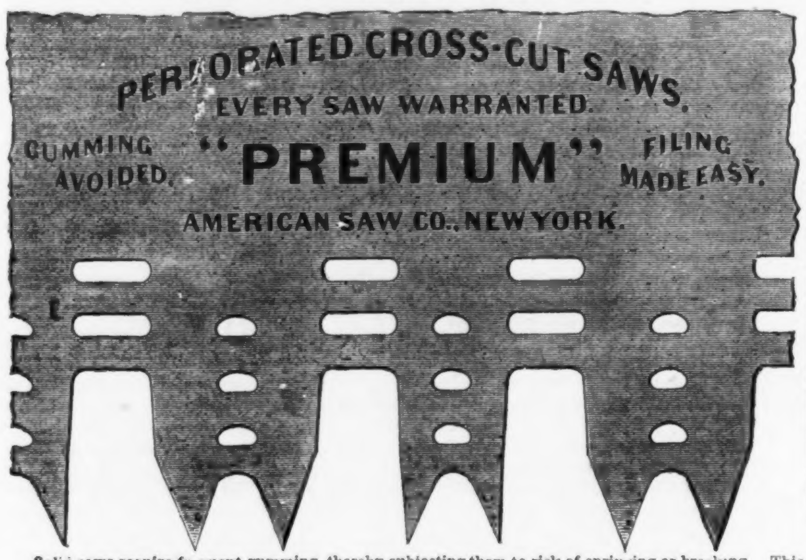
The annexed engraving represents HANKINS' ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability.

These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

AMERICAN SAW CO.,

No. 1 FERRY STREET, NEW YORK.



Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This is especially the case with cross cuts having *Patent Teeth*. In the perforated saws **all gumming is avoided,** and the teeth are easily kept long and in *proper shape*, saving *files, labor, expense* and *vexation*. As is well known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

DESIGNING AND ENGRAVING ON WOOD

52 JOHN ST. H. R. WHITE NEW YORK.

H. W. PEACE,

MANUFACTURER OF

SAWS OF ALL KINDS.

FACTORY, WILLIAMSBURGH, N. Y.

Excelsior Saw Works,

515 Cherry St., Philadelphia.

WM. McNIECE,

Manufacturer of

Superior Cast Steel Hand, Panel, Ripping, Ice, Compass, Hack, Butchers' Bow, Grafting, Pruning, Keyhole and Web Saws, Mowing Knives, Trunk Springs, And all other kinds of Springs, made from Sheet Cast Steel.

I make a specialty of the LARGEST SIZES of **Circular Saws**, and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted over *twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated **"Challenge" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

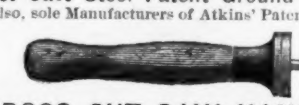
JAMES OHLEN.

E. C. ATKINS & CO.,

Indianapolis, Indiana,

Saw Manufacturers.

Best Cast Steel Patent Ground Saws.
Also, sole Manufacturers of Atkins' Patent



CROSS-CUT SAW HANDLE.

Best Patent Handle in use.
Manufactory and Office—Nos. 210 212, 214 and 216 South Illinois Street.

BOYNTON'S
LIGHTNING SAWS.

Awarded the Medal of the American Institute, 1872.

Two Direct Cutting Edges, instead of one Scraping Point. Note extra steel and durability over the old V, outlined on M tooth.

A Challenge of $500, toward expense of a public test, to prove that the Lightning Saws excel all others in Speed, Ease, and Simplicity, has been offered since 1870, and has never been accepted. More than 100,000 Lightning Saws were sold during the year 1872, the purchasers of which testify to their superior merits.

Our leading papers, such as the *Tribune, American Agriculturist, Christian Union,* etc., have published over sixty editorial notices recommending these Saws. Farmer's Clubs, Lumbermen, and Hardware Dealers unite in pronouncing the genuine Lightning Saw the greatest labor-saving implement of the age.

I have hundreds of letters from practical sawyers, voluntarily written, expressing their entire approval of these Saws.

Where the Hardware Trade do not sell the Lightning Saw, I will send a 6-foot cross-cut and a buck saw-blade on receipt of $6.

For Catalogue and additional information, address

E. M. BOYNTON, 80 Beekman St., New York,
Sole Proprietor and Manufacturer.

JAMES ECCLES,

ENGINEER

and General Machine Maker,

2423, 2425, 2427 Lombard St., Philadelphia, Pa

MANUFACTURER OF

SAWS OF ALL KINDS.

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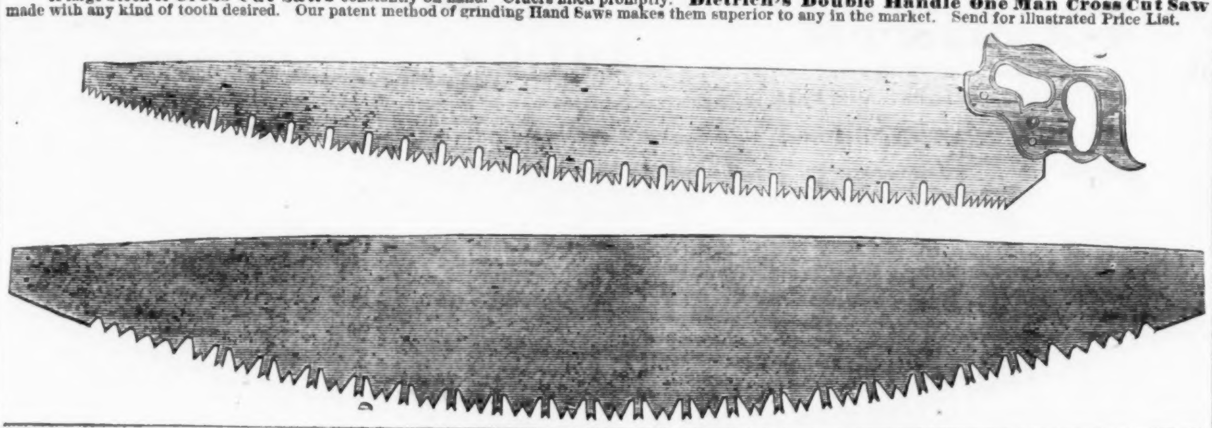

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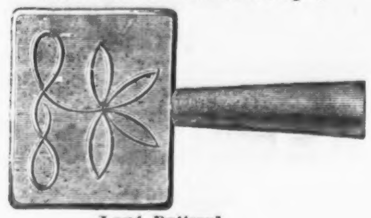


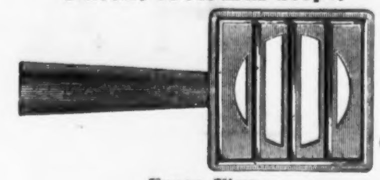
Leaf Pattern.

King Bolt Yokes.

No. 6 Fifth Wheels.

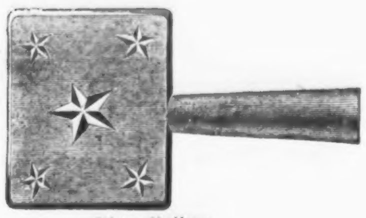
1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.



Upper View.

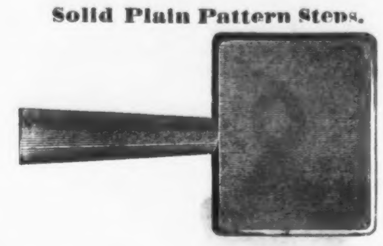
Lower View.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.

Solid Plain Pattern Steps.



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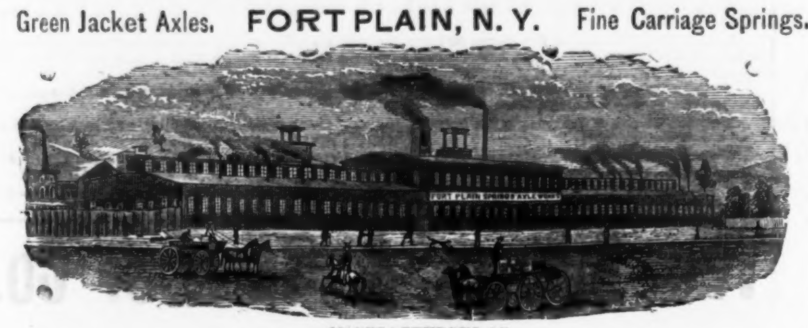

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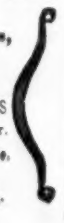

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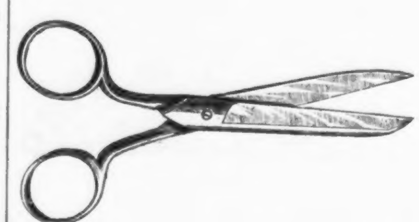

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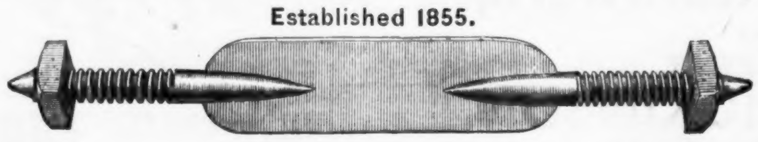

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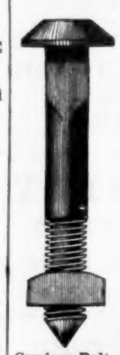
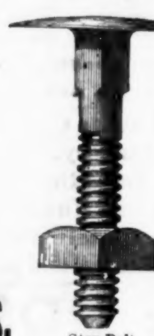


Carriage Bolt.



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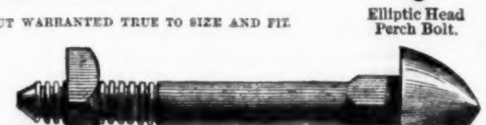

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The Iron Age Directory

and Index to Advertisements.

Metallurgical.

The Iron Age.

New York, Thursday, July 3, 1873.

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JAMES C. BAYLES . . . . Editor.
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CONTENTS.

Volume XII.

With this issue we begin Volume XII of *The Iron Age*. In announcing this fact we feel that we have nothing to apologize for in the past, and but little to promise for the future. The index to Volume XI, which accompanies this number, shows something of the results of our labors, during the past half year, to make *The Iron Age* valuable to our readers; while our steadily growing circulation and increasing advertising patronage attest the favor with which our journal is regarded in the trades and industries which it aims to represent with honesty and intelligence. We find increasing cause for satisfaction with the change made at the beginning of the year in the shape of our journal. It is now in a convenient form for filing in binders—an advantage which our readers fully appreciate—and we are able to increase the number of our pages from time to time, as the demands upon our space may require, without inconvenience to those who preserve our journal for binding. That the change is also warmly approved by our advertising patrons, is shown by the many letters of congratulation we are constantly receiving from friends throughout the country.

That we have few promises to make for the future, we have already stated. The aim of the conductors of this journal has ever been to make it as thorough and valuable as possible, and we have reason to think that the time when promises of improvement were necessary is past. It is our purpose to improve *The Iron Age* wherever and whenever it is in our power to do so, and the progress made within a year in increasing our facilities for the acquisition of the latest and most interesting commercial, metallurgical and scientific intelligence, has by no means satisfied our ambition in this direction. What we can do to make our journal still more valuable we shall do, believing that a liberal and enterprising policy in the conduct of a trade newspaper is the first condition of a worthy and permanently satisfactory success.

Steel and Iron: What are They.

It is a curious fact that, with the progress of scientific inquiry and investigation in the various departments of metallurgy, the question, What is Steel? has not yet been so definitely answered as to set at rest all further dispute. As most of our readers are aware, there has been a wide diversity of opinion among metallurgical authorities as to what constitutes the difference between steel and iron. The usually accepted definition of steel is that it is iron chemically combined with sufficient carbon to give it toughness and strength without brittleness. This, however, is not universally accepted as a correct definition of steel, nor does it agree with the results of chemical analysis, which show that the percentage of chemically combined carbon varies as much in steel as in iron. It is of great importance, however, that the difference between them should be clearly defined and generally understood. With a view to establishing, for commercial purposes, the exact difference between steel, cast iron and wrought iron, the Albion Steel and Wire Company, of Sheffield, have issued a circular inviting discussion, from which we take the following: "What is steel? The question is frequently "asked; and as we fail to find a clear, full, "and correct definition in any book, we will "give one—hoping that any one who thinks "it erroneous will make public the reason "therefor. Steel: A combination or alloy "of iron, that will forge, harden, and temper. There are various kinds of steel, "such as carbon cast steel, tungsten cast "steel, chrome cast steel, cyanogen cast "steel, and titanium cast steel, and several "other metals have been alloyed with iron "to make steel. There is also blistered "steel, which is made from malleable bar "iron, by a process called cementation; "German steel, which is made directly from "the ore, and sometimes from pig iron, in "the Catalan forge; and steel which is "made by other processes. The line between cast iron and steel is: when it is "capable of being forged it is steel, and "when it will not forge it is cast iron. And "the line between malleable iron and steel "is: when it will harden and temper it is "steel, and when it will not harden and temper it is malleable iron. Cast steel will "harden slightly when it contains from 0·25 "per cent. to 0·30 per cent. of carbon, and "ceases to be capable of forging if it contains much more than 1·75 per cent. of carbon." This seems like a very comprehensive definition, but it is not one which precisely meets the wants of metallurgical writers, as it is too involved, and would lead to a confusion of ideas on the subject which it attempts to make clear. All things considered, we prefer the definition of Mr. A. L. Holley, the distinguished engineer of the Bessemer process in this country, published in a recent issue of this journal. Mr. Holley defines steel as an alloy of iron cast while in a molten state into a malleable ingot, and expresses the opinion that any radical nomenclature founded on chemical differences can only lead to mistakes and confusion. "It," he says, "steel is defined as an alloy "of iron containing carbon enough to harden it when it is heated and plunged into "water, then puddled iron, although laminated and heterogeneous in structure, may "be steel, and the finest product of the "crucible, although crystalline and homogeneous in structure, may not be steel. "The fundamental and essential difference "between steel and all other compounds of "iron is a structural difference, and it is always easily determined, while steel and "wrought iron cannot always be distinguished by chemical analysis. The same "proportions of carbon, manganese, silicon "and other elements may exist in and similarly affect any malleable alloy of iron." Even this definition, which commends itself at once to the practical mind as according with, and harmonizing, the various differences of opinion found in books of reference, is not completely satisfactory, as it does not provide a correct definition of the blister steel made from wrought iron by the process of cementation. By this process iron becomes steel through chemical change. Its carburation is effected by bringing it in contact, at a proper heat, with carbon, oxide of carbon and slightly carburized hydrogen, each of which contributes something toward the carburation of the iron and toward the expulsion of its impurities. According to Fremy, the carbon penetrates the iron, reducing the silicates and setting free the carbonic oxide. Obviously, the difference between blister steel and the iron of which it is made is chemical, as well as structural, although Mr. Holley's definition holds good when the bars from the cementation chests are cast into malleable ingots after being cut up and melted in crucibles. In conclusion, we would say that the question, What is Steel? is one of much interest, and we shall be happy to devote a portion of our space to the letters of such of our correspondents as may care to discuss it.

And now arises the question—What is iron? We have been taught to believe that it is an element, and that it may be obtained chemically pure by a very simple process, which need not here be described. It now appears, however, that what has hitherto been regarded as pure iron consists largely of the element hydrogen, and, if this be true, the question arises whether a chemical element may not be discovered which will prove to be common to all metals and the base of all metallic salts, including iron. Professor Jacobi, a Russian savant, raises this question by announcing that he has, for the first time, subdivided what has hitherto been regarded as pure iron. He placed iron deposited by the action of the galvanic battery under the receiver of an air pump and, heating it to redness, disengaged hydrogen in torrents, leaving in place of the iron experimented upon an increased volume of a silver-white metal, very ductile and so soft as to be readily cut with a scissors. The metal, whatever it may be called, oxidizes rapidly in the air and decomposes water below the boiling point. How much of truth there may be in this story we do not know, and have no present means of ascertaining. We merely present it for what it is worth, because, if true, it contains a very interesting metallurgical nut which will be found worth the cracking.

The Possible Future of American Iron.

While we have no desire to attach more importance to the growing success of American efforts to compete with British enterprise in iron manufacture than properly belongs to it, we cannot forbear to note, editorially, the significant facts which come to our notice from time to time, showing the changes which are taking place in the course of the world's iron trade, believing that they will be found of interest to all classes of our readers. One of the latest of these facts comes to us in the shape of intelligence from Sheffield, England, to the effect that American orders for steel and its manufactures are being generally countermanded, because the goods hitherto made in Sheffield for this market can now be made cheaper and equally well at home. A Sheffield correspondent of *Engineering*, evidently wishing to put matters in the best light, says of American orders: "A little uneasiness is "beginning to be felt at the great strides "that American manufacturers are making "in the production of steel and finished "iron, and it is felt that if our makers are "really determined to hold their American "connection together, they must do so by "reducing prices. This, in some cases, they "can very well afford to do, as profits in one "or two departments of the steel trade are "by no means small." In his remarks on the trade in Staffordshire chains, the correspondent of the *Ironmonger* in that district says: "At this period of the year we have "usually been doing a great business in the "lighter goods with the United States. The "quotations have, however, lately so greatly "advanced that nothing is now being done. "It has not been an unusual circumstance "for an order to the extent of 5000 dozen to "reach one of the merchant firms of Wolverhampton, but that firm is now getting "scarcely an order, customers' communications intimating that the chains can be got "in America at prices under the quotations of "English makers. The high prices which "have been necessitated in the past two years "by the advances in iron have greatly stimulated the industry in the United States, and "team and draw chains and hames are now "being produced in immense quantities in "St. Louis. The rise in these goods in this "country, as compared with the quotations "a little over two years ago, is from 100 to "130 per cent. No wonder, therefore, that "American makers should be stimulated to "supply the wants of their own countrymen." Commenting on these facts somewhat sadly, the *Ironmonger* sagely concludes that, so far, at least, as England's supremacy in the iron trade is concerned, the fulfillment of Macaulay's prophesy of the New Zealander on the London bridge is nearer at hand than most people imagine.

Now, what do these facts, and those of a similar nature noted from time to time in previous issues of this journal, indicate? That we are about to cease importing iron altogether, and begin exporting it largely, in various crude and manufactured forms, to England? By no means. It needs but a hasty glance at the statistics of production and consumption of iron in the United States to show that we are, as yet, in no position to talk about either depending upon our own production exclusively, or supplying, to any considerable extent, the wants of other nations relying upon foreign sources for their iron. Should our production of pig in 1873 be half a million tons greater than in 1872, we should still find our native product more than a million tons less than the annual consumptive requirements of the country, whereas it is doubtful if our increase in production this year, as compared with last year, will exceed 450,000 tons, while the consumptive requirements of the country would, if met, have increased in a much larger percentage. We cannot, therefore, declare ourselves independent of foreign sources of supply, much less supply foreign markets, until our annual production of pig iron shall have nearly, if not quite, doubled. What, then, is the true significance of the facts above and previously presented, as showing the growing advantage of the United States and Great Britain in the production and manufacture of iron? Either they have no significance at all, or they are of the utmost importance as indicating the extent of the opportunities which are now opening to us of seizing and retaining control of the world's export trade in iron and its manufactures. It is difficult, perhaps, for those who have not carefully examined the condition of the iron trade at home and abroad to realize that the time for the fulfillment of those vague and indefinite prophesies of England's decline and America's supremacy, has come already, though so suddenly as to find us unprepared; but such is the fact, nevertheless, and it is one well calculated to inspire confidence in the present and permanent advantage of liberal investments in furnaces and rolling mills. Rapid as is our annual progress in this direction, it is far less rapid than the condition of the iron trade of the world would warrant, and we find occasion for surprise in the fact that ten furnaces and mills are not building for every one we now hear of as in course of construction. With our inestimable wealth of coal and ores, and a home and foreign demand only limited by our ability to supply it, the increase in our production of pig iron should average at least a million tons per annum during the next five years. This would give us no more iron than we could use and sell, and on no less product can we fully realize what may now be regarded with confidence as the possible future of American iron.

Skilled Engineers.

Few persons who have not made the subject a study, realize how much a competent and faithful engineer can contribute to the success of a manufacturing enterprise requiring steam power, or how heavy a burden the blundering or carelessness of an incompetent or unfaithful engineer imposes upon those who embark in such an undertaking without a comfortable reserve capital. When close economy is necessary—and it never ceases to be necessary, however large may be the profits realized—it can nowhere begin to better advantage than in the engine room. Many a promising manufacturing enterprise has failed because its power cost more than it ought to have cost, and because its profits were eaten up in repairs to boiler and engine, which, under better and more intelligent management, would never have been necessary; and yet the persons most directly interested in the success of such enterprises have imagined they were economizing in employing engineers whose services could be had for small wages. An employer without practical experience in the management of boilers and engines is, perhaps, easily deceived by the confident professions and fair promises of an incompetent engineer whom he may take into his employ; but he does not need much experience to teach him, if he looks carefully after his engineer, whether he does his work properly and carefully, and from inquiry he may learn whether the wages he demands are those which will command first-class men. If not, the employer may be pretty sure that his man will bear watching, for skilled labor is something which always commands its market value.

A few years ago it was thought that ability to stop and start an engine, to properly oil and clean it, and to make trifling repairs where necessary, were the only qualifications necessary for an engineer, and the cheapest man who could perform these simple functions was the most desirable to employ. The care of the boiler—if it received any care—was delegated to the fireman, whose chief qualification was ability to shovel coal. But we have learned from experience that the economy which employs ignorant or unfaithful men in these positions is of the kind that saves at the spigot to waste at the bung. The competent engineer must be a man of intelligence, who knows the theory of steam as well as its uses, and who could, if necessary, build a boiler and an engine. He should also have served as fireman long enough to have gained experience in the management of fires, and be able to superintend the labors of those under him. Exceptional talent and careful study may enable him to dispense with some part of this preparation, but he is the better in every instance for having learned his duties practically, as well as theoretically. His first duty, when entrusted with the management of an engine, is to familiarize himself with every part of it, ascertain its condition, as well as the condition of the boilers; his next duty is to experiment with his power in order that he may know how much steam is needed to enable his engine to do the duty expected of it, so that he may intelligently superintend the labors of the fireman. He should also estimate, as accurately as may be, the calorific power of his fuel, and see that it is properly prepared for the furnace, if preparation is necessary, before it is thrown in. He is then in a condition to discharge his delicate and responsible duties with intelligence and fidelity. The engineer who leaves to the unskilled fireman the care of the fires, knowing nothing of the results of his labors except such knowledge as may be gained from an occasional glance at the steam gauge, would be an expensive man to employ it he worked for nothing. As we have before shown in these columns, bad management of fires is invariably attended with a waste of fuel, and we know of instances in which this waste has been great enough to cause the failure of enterprises that, with more intelligent supervision of the fires, might have tided over the difficulties which, as it was, forced their suspension. We have not space, at this time, to discuss the proper management of fires, especially as we have before treated the subject in the fullest detail: suffice it to say, therefore, that upon the engineer of a manufacturing establishment devolves duties which ignorant and inexperienced men cannot properly perform, and which, if neglected, will often turn the scale of profit and loss in favor of the latter.

It need not be inferred from the foregoing that we would set up for the engineer a standard of efficiency to which no man of ordinary intelligence and capacity could conform. There are plenty of men thoroughly fitted for the position, whose services may be had for the asking, but employers must not suppose that they will work for less wages as engineers than they can earn as machinists. A skilled engineer need never seek employment nor work for low wages, and those who will work for little generally receive all they are worth, and often a great deal more. A manufacturer using steam power can always well afford to pay the right kind of an engineer a liberal salary, and if he is badly and wastefully served by the man whom he employs in this capacity, he has, as the rule, only himself to blame for it.

Scientific and Technical Notes.

The North British Railway Co. have lately undertaken a system of experiments with Mr. E. Gilbert's new system of

ELECTRIC COMMUNICATION FOR RAILWAY TRAINS,

which is well spoken of. The plan proposed by Mr. Gilbert offers the following advantages: (1.) Audible and visible signals between guard and driver, and guard and guard. (2.) Audible and visible signals from passengers to guards and drivers. (3.) Audible and visible signals to guard and driver on the accidental separation, whilst in motion, of any portion of a train. (4.) That sections of a train may be detached whilst in motion without disturbing the communication on the preceding portion of the train. A telegraph wire is fitted up with each train, running between the guard's van under the floors of the carriages to the guard's van in front, and also to the engine. The wire, which is in a small cable, runs along under the flooring of the carriages, and forms a communication between the guard in the rear van and the driver of the train. Within each compartment of the train is fitted up a circular plate, inscribed with the words "push," and "to warn the guard." So long as the disc remains in its normal condition the electric apparatus is not in action, but on the center portion of the disc being pushed in a simple internal arrangement provides that the electric circuit is thereby completed, and the bells in both vans and on the engine are set in motion. To prevent the improper use of this precautionary safe-guard, the disc is so arranged that on the center being pushed in the remainder changes color from white to scarlet, and cannot be restored to its original condition until an internal spring releases the mechanism, the key to effect this being in the hands of the guard. The coupling from carriage to carriage is effected by short cables, the ends of which are inserted into sockets attached to each carriage. These sockets are so constructed that while in the event of a carriage being "slipped" while the train is in motion—a thing frequently done in the case of express trains—the removal of a small peg enables the wire to be thrown off without bringing the electric apparatus into operation; but should the train from any accidental cause be separated into two portions the jerk pulls the cable, peg and all, out of an inner socket, and when this is done the electric circuit is completed, and the bells at both ends of the train begin to ring. The train to which the apparatus is now attached has been for some days running between Edinburg and Glasgow—twice each way; and in the instructions to the guards of that train, a code of signals has been provided. By one continuous ring of the electric bell the train is

signalled to stop instantly—this signal corresponding to the unbroken ringing that would be caused by any panic-struck passenger who might bring the apparatus into play, or by the splitting of the train into two by accident. Two distinct rings from the signal to start a train, and three for the engine-driver to "look out." The system of signaling is capable of extension to maintain any necessary communication between guards and driver, while, as we have shown, it affords a ready means whereby, upon emergency, any passenger may have a fast train brought to a standstill; and also provides for the alarm being given should a train, as sometimes happens, become detached at the couplings.

Additional papers rela[ting] to the

PROPOSED SHIP CANAL THROUGH THE ISLAND OF RAMISSERAM,

have been laid before the British Parliament, and the scheme now assumes definite shape. Mr. G. Robertson, Harbor Engineer for India, recommends that the southern entrance of the proposed canal be at a point westward of those proposed by Sir W. Denison and Mr. Stoddart, and less than a mile to the east of Paumben lighthouse. He believes sufficient protection from the swell of the monsoon would be afforded by the Cooresuddy and Shingle Islands; a floating boom may at times be found of advantage at the entrance of the canal to reduce the surface swell. The distance across the island is 3897 yards. At the northern end a considerable amount of protection would be given by the projection (to the east) of Paroovadum Point, on which the great temple stands. The proposed line is, at all events, more protected by this point than is the present Paumben Pass, which is used by sailing vessels even during the northeast monsoon. If it be found absolutely necessary to deaden the swell entering the canal, a basin might be excavated within the shore line to act as a wave reducer in the northeast monsoon, and as a coaling or traffic dock during the southwest monsoon. Eventually, Mr. Robertson believes, a similar basin would be found useful at the south end of the canal; but he has not included either in the present estimate of the total cost, which he puts at £440,000. This makes no allowance for what may be called the "furnishings" for the canal. Wharves, cranes, &c., can easily be erected where they are required. There is said to be good ground for expecting that the amount of dredging required for the maintenance of the canal will be not much. The first and more immediate object in the canal is to act as an auxiliary to the Suez Canal in shortening the passage from Europe to the east of India, and also the route between the east and west coasts of India. Should the canal be constructed the barren island of Ramisseram will, says Mr. Robertson, be the only point from Calcutta to Kurrachee (not excepting Bombay in its present want of ship accommodation) where a large vessel will be able to land and discharge her cargo direct on quay without the intervention of cargo boats. He believes that this fact alone will, as labor becomes dearer and time more valuable, attract a large proportion of the commerce of southern India, and perhaps the north of Ceylon, to the Island of Ramisseram, independently of the more immediate value of the canal—the shortening of the passage to and from India.

It is announced that the construction of

A RUSSIAN TRANS-CONTINENTAL RAILROAD

to connect the Baltic with the Pacific through Siberia will be commenced so soon as arrangements can be made, and, probably, before the end of this year. It will be commenced at Nijni-Novgorod, in the Volga—in the basin of the Caspian—800 miles from St. Petersburg, in latitude 56 degrees, and run in an eastward direction 600 miles to the summit of the Aral chain, and 250 more in the same direction to Novolk; thence southeastward through Tomsk and Krasnoyarsk 1500 miles to Irkoutsk, on Lake Baikal, in latitude 53 degrees; thence the route to the Pacific, a distance of 1500 miles, will be determined by survey yet to be made. Such is the general project; but no working surveys between Novgorod and Irkoutsk have yet been made, and the plans may be altered. The total distance to be built is about 4200 miles, and of this distance more than 3000 will be north of latitude 50 degrees, and much of the distance in the basin of the Arctic ocean, north of the Altai Mountains, and a considerable elevation above the sea, so that it is almost certain the road will be closed to travel for five months in the year in some part of its route by snow and ice. The Pacific terminus will probably be at Alexandreffsky, on the Japanese sea, in latitude 40 degrees—that place being the chief port of Manchoora since the transfer of the government offices from Nicolaieffsk, on the Amoor River. Nothing is said of the time when the road is to be finished, and a long time will elapse, as the work will advance only from the west. Its completion, however, will be a great benefit to the coasts and commerce of the North Pacific.

The following account of the

EAST INDIAN METHOD OF CLEANING SILVER,

as furnished by a correspondent, will be found interesting: The native jewelers of India never touch silverware with any abrasive substance. For all articles of the kind, even the most delicate, the method of cleaning is by rubbing briskly with slices of juicy lemons. For delicate jewelry the Indians cut a large lime nearly in half and insert the ornament; they then close up the halves tightly and put it away for a few hours. The articles are then removed, rinsed in two or three waters, and consigned to a saucepan of nearly boiling soapsuds, well stirred about, taken out, again brushed, rinsed, and finally dried on a metal plate over hot water, finishing the process by a little rub of washleather (if smooth work). For very old, neglected, or corroded silver, the article is dipped, with a slow stirring motion, in a rather weak solution of cyanide of potassium; but this process requires care and practice, as it is by dissolving off the dirty silver the effect is obtained. Green tamarind pods (containing oxalate of potash) are greater detergents of gold and silver articles than lemons, and are much more employed by the artisan for removal of oxides and fire marks.

A successful trial of

A NEW POP-VALVE FOR BOILERS

was lately made at the iron shipbuilding yard of Messrs. Harland & Wolff, Belfast. It is styled the "pop-valve" from the suddenness with which it springs open under the influence of the steam pressure from the interior of the boiler. It is composed of an alloy consisting mainly of nickel, which is almost as hard as steel, and possesses the additional advantage of not oxidizing by moisture. The valve in ordinary use generally fails to indicate the exact degree of steam pressure on the interior surface of the boiler, as from the moment it commences to open the escaping gas renders the pressure on the valve surface less than that on the rest of the boiler, on which the pressure has frequently risen to a degree sufficient to cause an explosion, even when the valve remains open. In the "pop valve" the machine is contrived with a view to equalizing the pressure on the valve to that of the boiler. In the tests to which the same invention has been subjected in this country it is reported that, where the limit of pressure on the boiler was fixed at 50, the utmost increase in the generation of steam failed to raise the pressure on the valve, and consequently on the boiler, to more than 50. The valve can be applied both to stationary and locomotive engines.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, July 2, 1873.

The dullness mentioned of late as the principal feature of the financial markets, has continued through the past week without interruption. Money continues easy, and borrowers on call have been freely accommodated at 3 @ 6 per cent. Prime mercantile paper has been in good demand at 6 @ 8 per cent. The July dividend and interest payments payable here will, it is estimated, aggregate not less than $35,000,000.

The gold market has been steady during the week, and the fluctuations of the premium have been within narrow limits. The daily range is shown as follows:

	Highest.	Lowest.
Thursday	115¾	115⅜
Friday	115⅝	115⅜
Saturday	115⅝	115⅜
Monday	115⅝	115⅜
Tuesday	115⅝	115⅜
Wednesday	115⅜	115

The stock market has been almost wholly devoid of speculative activity, with principal dealings in Union Pacific, Lake Shore, Western Union, Ohio and Mississippi, and Pacific Mail. Miscellaneous shares are dull. The highest and lowest of to-day's quotations on 'change are given below.

Government bonds are strong, fluctuating with gold. Railroad bonds are also strong, and it is believed that the reinvestment of the July dividends will cause an active demand for choice securities of this character. The closing quotations of governments are given below.

The bank statement shows that the banks have now nearly fourteen million dollars in what is reckoned as lawful money above a 25 per cent. reserve, or $1,775,075 more than last week. The percentage of reserve to liabilities of the national banks is now 30·97, of the State banks, 27·61, and of both classes together, 30·55. The following is a comparison of the averages of the past two weeks:

	June 21.	June 28.	Differences.
Loans	$278,993,800	$281,596,600	Inc. $2,602,800
Specie	27,398,300	27,661,500	Inc. 263,200
Circ'lation	27,332,000	27,311,400	Dec. 40,600
Deposits	220,392,500	224,040,800	Inc. 3,648,300
Leg. Ten.	46,704,200	49,119,000	Inc. 2,414,800

The movements in foreign trade for the week are shown as follows:

IMPORTS.

	1871.	1872.	1873.
Tot. for week	$5,450,222	$5,794,383	$8,447,831
Prev. reported	186,401,347	218,837,868	204,855,775
Since Jan 1	$191,851,569	$224,632,251	$213,103,606

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Anvils	156	$1,680
Brass goods	74	10,293
Bismuth	2	1,149
Bronzes	6	704
Chains and anchors	77	4,921
Copper		11,251
Cutlery	186	49,500
Gas fixtures	7	1,030
Guns	96	16,618
Hardware	37	5,400
Iron, hoop, tons	22	1,747
Iron, pig, tons	2,326	91,690
Iron, sheet, tons	83	8,880
R. R. bars	15,921	203,971
Iron cotton ties	506	1,903
Iron tubes	805	1,931
Iron, other, tons	1,092	56,078
Lead, pigs	1,684	10,735
Metal goods	248	23,3 0
Nails	14	281
Needles	20	10,356
Old metal		5,477
Plated ware	3	1,592
Per. caps	19	2,945
Saddlery	15	3,005
Steel	4,912	70,084
Spelter	273,942	17,126
Silverware	3	616
Tin, boxes	17,205	167,378
Tin, 2376 slabs	144,649	42,597
Wire	112	8,647
Zinc	228,142	15,957

EXPORTS, EXCLUSIVE OF SPECIE

	1871.	1872.	1873.
For the week	$2,733,930	$4,472,957	$5,568,681
Prev. reported	115,456,566	106,650,647	134,647,188
Since Jan. 1	$118,190,496	$111,123,604	$140,215,869

EXPORTS OF SPECIE.

Total for the week	$2,043,804
Previously reported	24,927,410
Total since January 1, 1873	$26,971,214

Government bonds at the close were strong. We quote:

	Bid.	Asked.
U. S. Currency 6s	114¾	114⅞
U. S. 6s, 1881, reg	117⅝	117⅞
U. S. 6s, 1881, c	119⅞	119¾
U. S. 6s, 5-20 reg. May and Nov	115⅞	116
U. S. 6s, 1862, c	115⅞	116⅛
U. S. 5-20 1864, c	116⅝	116⅞
U. S. 5-20 1865, c	117⅜	117⅝
U. S. 5-20 1867, r. Jan. and July	115⅝	115⅞
U. S. 5-20 1865, c. Jan. and July	116⅛	116⅜
U. S. 5-20 c. 1867	117⅜	117⅝
U. S. 5-20 c. 1868	117⅜	117⅝
U. S. 10-40 reg	113⅞	114⅛
U. S. 10-40 c	114⅛	114⅜
U. S. 5s 1881 cou	114⅛	114⅜

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	103⅛	102⅝
Lake Shore	96⅛	95⅝
Rock Island	109⅜	109⅛
Del. Lack and Western	98	98
Wabash	68⅝	68⅜
Western Union Telegraph	85⅝	84⅞
Northwestern	71	71
Milwaukee & St. Paul	51⅛	51⅛
Panama	110⅛	110
Pacific Mail	38⅞	38
Erie	62⅞	62⅜
Ohio & Mississippi	39⅞	39
Union Pacific	26⅞	26
C. C. & I. C	29	28⅞
Hannibal and St. Joseph	37⅞	37⅞
Consolidation Coal	52⅛	52⅛
Adams Express	94⅞	94⅞

GENERAL HARDWARE.

Trade is, of course, quiet, there being very little activity in any branch. We cut the following cable dispatch from a morning paper:

"A HARDWARE ALARM IN BIRMINGHAM.

"LONDON, July 1.—The Birmingham and Wolverhampton journals express alarm at the decrease of orders for hardware from America, and at the remarkable development of the trade in the United States, whose manufactures are supplanting those of England in the colonies and South America."

The fact has for some time been notorious that the high prices prevailing in England and Germany had greatly lessened the amount of orders sent out. Of course, the same cause has given us an advantage in markets where American and foreign goods come in competition.

We have this day received an advance copy of the New Catalogue of Hart, Bliven & Mead Mfg. Co., comprising, beside all the goods of their own make, a full assortment of general hardware. It is, we think, the most complete work of the kind yet issued, and, as the only one lately published, has great value from the fact that the lists are those now current, and not those of a year or two ago, many of which are obsolete. The work is comprised in a handsome volume of 574 pages, copiously illustrated, and exceptionally well printed on fine paper, making altogether a book of which all concerned may be proud. It is from the press of Tower, Gildersleve & Co.; the majority of the wood cuts are by N. Orr & Co.; and the binding by W. Waters & Son—all of this city. A discount sheet accompanies it, of which we print below as much as relates to goods of their own manufacture.

Page.		Dis. ℔ ct.
2	Nickel Plated Steel Squares	50
2	Nickel " " by the case	50&10
	Add for Nickel Plating—All 1 foot Squares, $2·50 per doz. extra; All 1¼ inch wide Squares, $3 per doz. extra; 2 inch, Nos. 3, 4, 5, 6, $3·50 per doz. extra; 2 " Nos. 1, 2, 2½, 15, 100, $4 per doz. ex.	net
2	Steel Rules, $3 per doz. extra. Parties who become entitled to the full discount on Steel Squares will be allowed 5 per cent. discount on our prices for Nickel Plating.	
2	Steel and Iron Rules	50
3	Carpenters' Steel Squares	50
3	Carpenters' Iron "	50
3	Carpenters' Steel and Iron Squares, by the case	50&10
4	Socket Firmer Chisels, No. 1, or extra	60&5
4	Socket " No. 2	60&5&10
4	Socket Corner Chisels, No. 1, or extra	60&10
5	Socket Framing Chisels, No. 1, or extra	60&10
5	Socket " " No. 2	60
5	Carpenters' Slicks, No. 1, or extra	60&10
6	Carpenters' Drawing Knives, No. 1, or extra	60
6	Carpenters' " No. 2	60&10
6	Coach Makers' " No. 1, or extra	60
7	Wagon Makers' Drawing Knives, No. 1, or extra	60
7	Farmers' Drawing Knives	50&10
7	Shingle " "	60
8	Handles, all kinds	50
8	Screw Drivers	50
9	Socket Scratch Awls	40
9	Common " "	40
10	Ice Axe and Picks	50
10	Heavy Ice Picks	33⅓
10	Cold Chisels	33⅓
10	Cheese and Butter Tryers	50
11, 12	Hammers, all kinds	50
12	Shingling Hatchets	50
13, 14	All Articles named on these pages	50
15	Bench Screws. Change list—1¼ in. per doz., $30·50	50
15	Blacksmiths' Drills	50
16 to 44	All Articles named on these pages	50
45 to 55	" " "	50&5
56	Hat and Coat Hooks. Change list. Per gross $3·30 $4·00 $3·70 $4·50; Nos. 11 12 111 112	50&5
57	Hat and Coat Hooks, Nos. 14 and 114	50&5
57, 58	Brass Hat and Coat Hooks	50
60	Harness Hooks	50
60	Lamp and Cabin Door Hooks	50
61	Bird Cage Hooks, all patterns except Cottage, No. 1	50
61	Bird Cage Hooks, Cottage, No. 1	50&7½
62, 63	All Articles named on these pages	50
64	Spiral Spring Gate Latches	50
64	Gate Hinges, No. 1	50
65	Gate " Nos. 2 and 3	50
65	Plate "	50
66	Barn Door Rollers	50
67 to 70	All Articles named on these pages	50
71, 72	Pulleys, all kinds	50
73 to 8	All Articles named on these pages	50
81	Window Springs and Sash Props	50
81	Window Spring Bolts	50
82	Shutter Lifts and Stubs and Plates	50
83	Japanned Shutter Screws	50
83	Japanned " Bars	50
83	Figured Enameled Shutter Bars, No. 20	50
84	Shutter Hooks and Bars	50
85	Sash Fasteners. All Patterns except No. F.	50
85	Sash " No. F	50
86, 87	Sash "	50
88	Sash " No. 75	50
88	Sash " No. 70	50&7½
89 to 97	All Articles named on these pages	50
98	Door Handles	50&12½
99, 100	All Articles named on these pages	50
101	Door Handles. Change List—No. 230, per doz. $76	50
102, 103	Door Handles	50
104	Door Handles. Change List—No. 40, per doz. $53; No. 50, per doz. $84	50
105 to 108	All Articles named on these pages	50
109	Thread Escutcheons. Change list, Common, Per gross $0·90 1·00 1·10 1·20 1·50; Inch 9-16 ⅝ 11-16 ¾ 1	50
109	Bed Keys	50
110	Bedstead Fastenings	50
111 to 116	Caster, all kinds	50
117 to 127	All Articles named on these pages	50
128	Bell Cranks. Change list—No. 19, per doz. $6; No. 11, per doz. $5·50	50
128	Check Springs	50
128	Bell Spikes	50
128	Cork Pressers	50
128	Towel Rollers	50
129 to 146	All Articles named on these pages	50
147	Coal Tongs	50&5
147	Toy Sad Irons and Stands	50
148, 149	All Articles named on these pages	50
150	Family Grindstones	50
150	Butchers' Cleavers	50
150	Nut Cracks	50
151	Match Safes	50
151	Twine Boxes	50
152	Hoof Jacks	50
153 to 158	Carriage Bands, Silv'r Pl'd. add 10 less 5	
153 to 158	" Solid Oroide. add 15 less 5	
153 to 158	Gold Plated Bands, add to price of Silver—	
	Heavy Rim, 1½ inch deep, per set, $0·75; Cincinnati Rim, 1½ " 1·25; Cincinnati " 1½ " 1·25; Cincinnati " 2 " 1·50; Cincinnati " 2½ " 1·75; Central Park, 1½ " 1·00; Central Park, 2 " 1·25; Fell, 1½ " 1·00; Bell C'tral Park, 1½ " 1·50	
159	Carriage Bands, Iron Rim	15&5
159	Carriage " Iron Bell	10&5
160	Shaft Sockets, No. 5	15&5
160	Shaft " No. 10, Silver, Nickel and Gold Plated	15&5
160	Shaft Sockets, No. 10, Solid Oroide	10&5
160	Shaft " No. 15, add 1 inch—Per dozen pairs, $9·60 Silver Plated. 9·60 Solid Oroide. $10·70 Nickel Plated. 11·25 Gold Plated.	10&5
161	Shaft and Hame Sockets	15&5
162	Whiffletree Sockets, No. 40	10&5
162	Whiffletree " No. 45, add 1 inch—Per dozen pairs, $6·80 Silver Plated. 6·80 Solid Oroide. $7·50 Nickel Plated. 10·00 Gold Plated.	10&5
162	Whiffletree Sockets, No. 50, add 1 inch—Per dozen pairs, $13·25 Silver Plated. 13·25 Solid Oroide. $14·20 Nickel Plated. 19·75 Gold Plated.	10&5
163	Whiffletree Sockets, No. 55, add 1 inch, Per dozen pairs, $6·80 Silver Plated. 6·80 Solid Oroide. $7·50 Nickel Plated. 10·00 Gold Plated.	5&5
163	Whiffletree Sockets, No. 60, add 1 inch, Per dozen pairs, $13·25 Silver Plated. 13·25 Solid Oroide. $14·20 Nickel Plated. 19·75 Gold Plated.	10&5
164	Neck Yoke Sockets, No. 65	10&5
164	Neck " Nos. 70 and 75	10&5
164	Neck " No. 80, add 1 inch. Per dozen pairs, $9·30 Silver Plated. 9·30 Solid Oroide. $10·40 Nickel Plated. 15·75 Gold Plated.	10&5
165	Neck Yoke Sockets, No. 85, Change List—Per dozen, $13·92 Silver Plated, 13·92 Solid Oroide, $16·30 Nickel, 21·85 Gold. ¾ in. Silver Plated. ¾ in. Solid Oroide. Add 1 in. Silver.	10&5
165	Pole Sockets, Nos. 90 and 95	10&5
166	Pole " Nos. 100 and 105	10&5
167 to 171	All Articles named on these pages	50, 10&5

The new Bolt list adopted at Pittsburgh has, we believe, been generally accepted by the manufacturers. Russell, Burdsall & Ward, however, still adhere to the list made some 10 years ago.

On the 20th of March last the National Association of Saw Manufacturers was organized, and, as our readers are aware, a new list for Cross-Cut Saws formed an important feature in the business transacted at that time. Owing to some misapprehension on the part of some of the members as to the time the new list was to take effect, some irregularites have occurred, to remedy which the following action has been taken:

At a meeting of the Executive Committee of the National Association of Saw Manufacturers of the United States, held at the Osburn House, Rochester, N. Y., June 25th, 1873, to take action in the matter of violation of prices adopted by the Association, March 20th, 1873, on Cross-Cut Saws, which was to take effect immediately, but certain parties having claimed that owing to omission of the Secretary to embody the same in new list, they had a right to sell at old prices until May 1st—therefore be it

Resolved, That in strict justice to all parties interested the price of Cross-cut Saws be reduced where necessary, to agree with those of last year, until the next regular meeting of the Association, to be held in Cleveland on the 1st Wednesday of December next, and that the prices on all other Saws remain at Association prices, as agreed.

Signed. JOSEPH FLINT, President,
M. MCPARLIN, Secretary.

Henry Disston & Sons have issued, under date of 1st instant, the following circular, together with their discount sheet, which is given below:

TO THE HARDWARE TRADE.—"SPECIAL NOTICE."

We desire to call attention to the annexed list of prices for Cross-Cut Saws. The discounts will be as heretofore.

Great American, Lumberman, Nonpareil, Climax, Champion and Hook Tooth, set and sharpened	70 cts. ℔ ft.
Extra Spring Steel Plain Tooth, set and sharpened	70 "
Hook Tooth, No. 2, set and sharpened	65 "
Cast Steel, No. 2, set and sharpened	60 "
Hook Tooth, No. 3, set and sharpened	60 "
Cast Steel, No. 3, Plain Tooth, set and sharpened	54 "

On and after date our discounts will be as follows:

Page 8 to 22 inclusive	12½	per cent.
" 23 to 25	40	"
" 21 Improved Try Squares	30	"
" 26	50	"
" 27	12½	"

In accordance with a notice given some weeks ago, the manufacturers of Brass Kettles advanced the price 5 cents per lb. on the 1st inst. We quote the goods at 55 cents, and in lots 500 lbs., 50 cents net.

The card rate for Nails was changed on the 26th ultimo, from $5·25 to $4·75 for 10d. to 60d. The matter of discount for quantity was left open, and Nails are selling at about the figures ruling for the past two weeks. The market, however, in view of the fact that all the Eastern mills will shut down for six weeks commencing on the 12th inst., has gained strength, and holders are not anxious to sell new customers at bottom figures for large lots. We quote Nails in lots of 100 kegs and over at $4·65 net. Large lots, say 500 to 1000 kegs, have been sold at $4·50, but, as may be inferred, there is no disposition to force sales at this figure. For small lots the card rate net is asked. The revised list is given below.

COMMON, FENCE AND SHEATHING.

10d to 60d	per keg.	$4·75
8d and 9d	"	5·00
6d and 7d	"	5·25
4d and 5d	"	5·50
3d	"	6·25
3d fine	"	7·00
Spikes, of all sizes		$5.00

FINISHING OR BRADHEAD, FLOORING, BOX, COOPERS', SLATING, AND TOBACCO.

10d and larger	$5·25
8d	5·50
6d and 7d	5·75
4d and 5d	6·00
3d Slating	6·25

CLINCH NAILS.

3 inches and larger	$6.25	⅝ kegs.	$3·38
2½ and 2¾ inches	6·50	"	3·50
2 inches and 2¼ inches	6·5	"	3·3
1¾ inches	7·00	"	3·75
1½ inches	7·25	"	3·88

In Foreign Hardware there is little or no movement, and prices, in the absence of inquiry, are without change. We quote ⅝ Coil Chain at 9 cents, gold, in small lots, but for full packages this figure can be shaded, and we hear of large lots offering at 8½ cents. Recent advices from Birmingham report an advance on Fire Irons and a slightly increased discount off Curry Combs; also declines on several unimportant articles of Shelf Hardware, but the general result is fully balanced by advances on seasonable goods.

W. F. Shattuck & Co., 113 Chambers street, have issued, under date of 1st instant, an illustrated catalogue and price list of their own goods and the goods of the manufacturers they represent.

We would call the attention of our readers to the advertisement on another page, of Jewett's patent crystal spring water filter, manufactured by John C. Jewett & Sons, Buffalo, N. Y. This valuable invention has been before the trade for several years, and has elicited from dealers and users, both in the United States and Canada, numerous testimonials as to its efficiency and usefulness. The improvement in this filter over others is thus described by the manufacturer:

First—In sinking a vessel or receptacle in the main and permanent filtering bed, and arranging therein a filtering cup which can be readily removed, cleansed and refilled, through which the liquid is first passed, the grosser particles of foreign matter being intercepted before reaching the main bed, which can thus be used for years without change or renovation.

Second—It is evident by means of this improvement the greater portion of the impurities will be deposited or intercepted in the bottom of the receiver—in the sponge, in the gravel cup, or in the bottom of the stationary vessel, which receptacle is provided with small holes near its upper edge for an escape for the water into the main filtering bed.

Third—The operation, which is as follows: Water being poured into the receiver, a partial deposit takes place at its bottom. The sponge and gravel in the cup will remove the grosser particles of foreign matter contained in the water which passes through the perforated bottom of the cup into the outer stationary vessel, at the bottom of which a further deposit takes place. From the top of this vessel the water flows through the perforations into the permanent bed, through which it slowly filters into the reservoir beneath.

Fourth—A charcoal packed double wall reservoir for ice and filtered water.

These Filters are handsomely grained in oak, with plated lever faucets, and are made in five sizes as follows:

No. 1, Receiver 1 Gal.,	Reservoir 1½ Gal.			$7·00
No. 2, " 1½ "	" 2	"		9·00
No. 3, " 3½ "	" 3	"		11·00
No. 4, " 3½ "	" 4½	"		13·25
No. 5, " 5 "	" 7	"		16·50

ORNAMENTAL STYLE—TWO SIZES.

No. 7, Receiver 3 Gal.,	Reservoir 3½ Gal.	$15·00
No. 8, " 4 "	" 5 "	18·00

George B. Walbridge, 55 Chambers street, in a circular dated 1st instant, offers the Handles of the Woolworth Handle Works at the following reduced prices: Full cases, discount 10 per cent. Less quantities, list net. Axe, Pick, and Sledge Handles are packed in cases of five, ten and twelve dozen each. A full stock constantly on hand.

Under the head of Special Notices, on the 17th page, will be found a card of Matthew Chapman, of Greenfield, Mass., in relation to his rights as owner and patentee of the Swelled Handled Table Cutlery, stamped "J. Russell & Co."

IRON.

American Pig.—There is very little actual trade doing in American Iron, though some of the larger dealers report a better inquiry from manufacturers, and anticipate an improvement in the trade in the near future. The general features of the trade at the movement, however, remain about the same. The companies are said to be largely sold ahead of No. 1 brands, some of the most prominent all the way to January next, and are generally behind hand in their deliveries. Very little of this brand is offering from the furnaces, while some of the companies have withdrawn from the market entirely, but where lots are for sale, they are not attainable below $47 @ $50, although once in a while an outside lot may be had at $46. We quote No. 1, from $46 @ $50; No. 2, $43 @ $45; and Gray Forge, $36 @ $38.

Scotch Pig.—There is a trifle improvement to notice in the general tone of the market for Scotch Iron. Nearly all the lots that have been pressing on the market have been disposed of to dealers, who have worked off a fair share of it in small jobbing lots, leaving but comparatively a light supply on hand; and the low prices obtained, and, consequently, severe losses sustained by the steamship companies, have compelled them to stop bringing Iron for ballast, and they are now substituting stones and other articles, so that the stock on the way here is light. Manufacturers are said to be looking round for stock, though not appearing disposed to purchase at the moment. We quote sales of 100 tons Glengarnock, at $44; 100 tons Eglinton, at $42·75; 200 tons Eglinton, at $42·50 @ $43·50; and 100 tons Carnbroe, on private terms. There are also rumors of 350 tons Glengarnock and 200 tons Monkland on private terms, which we were unable to verify. We quote at the close: Coltness, $52·50; Gartsherrie, $50; Glengarnock, $44·50 @ $45; Eglinton, $43 @ $44.

Following are the prices of Scotch Pig Iron in Glasgow, as reported by Messrs. J. E. SWAN & BROS., under date of June 13, 1873:

	No. 1	No. 3	No. 4
Gartsherrie	125/	114/	....
Coltness	127/6	118/	....
Summerlee	125/	114/	115/
Langloan	122/6	114/	....
Govan	115/	113/	115/
Calder	*127/6	114/	....
Shotts, Bessemer	170/	165/	....
do Ordinary	125/	116/	....
Carnbroe	120/	114/	115/
Wishaw	116/	114/	115/
Monkland	119/	114/	....
Chapelhall	125/	114/	....
Clyde	115/	113/	115/
Quarter—Clyde	115/	113/	115/
Glasgow Warrants 3-5, No. 1; 2-5, No. 3, g. m. b. 111/6.			

*f. o. b Glasgow, 1/ per ton, extra.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

	No. 1	No. 3	No. 4
Glengarnock, Ardeer	120/	114/	....
Eglinton, Lugar, Muirkirk, Portland — Branded Eglinton	114/	112/	113/
Dalmellington	115/	113/	111/

CURRENT RATES OF FREIGHT ON PIG IRON.

To	From Glasgow.	From Ardrossan.
New York	15/	15/
Boston	17/	17/
New Orleans	20/	20/
Baltimore	17/	17/6
Philadelphia	16/	16/
Providence	20/	18/

Bar.—The demand continues exceedingly light, and prices from store are again reduced $2·50 per ton.

Old Rails.—There is little if anything, doing in Old Rails, and values wholly nominal. To force a lot on the market, it is doubtful if over $47 could be realized, but still to enter the market as a buyer, stock could not be obtained below $50.

Rails.—There have been no transactions the past week in either English or American, and in the absence of actual business values are uncertain and nominal.

Scrap.—Trade is very quiet in Scrap Iron, and we only hear of 200 tons being sold at a private price, on time. Holders are asking $46·50 @ $48, for No. 1 from yard, but this must be considered merely a nominal quotation.

METALS.

Copper.—The demand for Ingot Copper continues limited to such small lots as are required by manufacturers for immediate use, and the few transactions reported have been about on a basis of last week's prices. The approach of a close holiday also tends to add to the natural dullness prevailing in the trade. Sales for the week, in lots, will foot up about 150,000 to 160,000 lbs. Lake, at 28¾c. @ 29c. English Copper continues quiet, and we only hear of some 35,000 lbs. at 28¾c. @ 28½c. A lot of Old Copper, just arrived from the West Indies, changed hands at 26c. Manufactured Copper and Yellow Metal Sheathing continues quiet, but values remain as last quoted. We quote 27c. for Bronze and Yellow Metal Sheathing, and 32c. for Yellow Metal Bolts, all net cash.

Tin.—There has generally been a good demand for Pig Tin the past week, though toward the close the market presented rather a quiet appearance, as is usually the case in most all business circles on the eve of a close holiday, and more especially is this the case this year, from the fact that nearly all trades have decided to suspend business from the eve of the 3d to the morning of the 7th inst. Prices, however, continue very strong, and at the close, with cable advices of a further slight advance abroad, holders are generally asking a trifle higher. We note sales during the week of 1500 Slabs Straits and Billiton, at 31⅝c. @ 32c.; 40 tons English, at 30½c. @ 30⅝c.; 25 pigs, do., at 31c.; and 100 slabs, Banca, at 36c. At the close Straits are held, 31⅝c. @ 32c.; English, 30⅝c. @ 31c.; and Banca, 36½c., all gold valuations. Plates were active early in the week, though more quiet at the close, and prices continue fully as strong as heretofore. We quote: I. C. Charcoal, $11·25 @ $11·50; I. C. Coke, $9·25 @ $10; Charcoal Terne, $10 @ $10·50; and Coke Terne, $8·75 @ $9.

Lead.—The demand for both foreign and domestic Pig has ruled very slow, and few transactions of importance have been consummated. Prices, however, remain about steady at the reductions noted last week. We quote Spanish and German ordinary at 6⅝c. @ 6⅝c., English at 6¾c. @ 7c., foreign Refined 7⅛c., and domestic 6⅛c. @ 6⅛c., all gold. Manufactured Lead continues steady at 9⅝c. for Bar, 10½c. for Sheet and Pipe, and 16½c. for Tin Lined Pipe, all less the usual discount to the trade.

Spelter and Zinc.—Foreign grades of Spelter continue very quiet, but without essential change of price. We note sales of 25 tons Silesian at 7⅜c. @ 7½c., gold, and the market generally quoted at 7⅝c. @ 7½c., gold. Domestic Plates are also quiet and more or less nominal at 8⅝c. @ 11c., currency. Sheet Zinc still rules very quiet, though the prices remain at 10c., less 4 per cent., gold, from agents' hands.

Antimony.—Only a small trade is going on in this branch of the Metal market, and we hear of only about 10 casks Regulus having changed hands at 13¾c., gold.

PHILADELPHIA.

Messrs. LLOYD, SUPPLEE & WALTON, 625 Market street, under date of July 1, report as follows: Our spring trade being entirely over, and the early summer trade which calls for harvesting tools having ended, the Jobbing Hardware trade is naturally very quiet. We have passed through a season of unusual activity, and to the trade generally a satisfactory season. The aggregate of sales has been large, and prices fairly maintained; and although collections have been slow and many bills run overdue, still we think but few losses have been made. The season ended, the employes are taking their summer vacations, leaving but a small portion of the force at home to attend to local trade. A stranger is struck with the dull and quiet appearance of the jobbing houses, which will most likely continue for thirty days. This dullness will allow the houses to get their stocks in shape, quantities needed for fall trade adjusted, equalize prices, and better adapt themselves for the fall campaign, which, from present indications, must be fair. We think the entire trade in our city is in a healthy condition, and were it not for the little petty jealousy which occasionally will crop out, we would say each is desirous that the other should continue so and be proud of the general good standing of the houses. We look for but few changes in prices of goods. The decline upon a few goods has been anticipated. Strap and T Hinges, which we now quote at discount 30 per cent., and Wrought Butts, which rule about 10 per cent lower; Blind Butts, which are now offered at discount 40 per cent., are all prices given for early fall orders. Clothes Wringers should rule higher. Whether the trade, which has been somewhat demoralized, will be able to get the proper advance, remains to be seen. The price of Rules remains the same, although we hear of no one (either manufacturer or jobber) who is able to fill orders promptly; their stock being entirely exhausted great delay is necessary in filling orders. Some new and beautiful styles of table cutlery have been shown us, which are promised to be upon the market for fall trade. The trade having become tired of the old styles, which have been shown for years, these new ones will, no doubt, be at once taken by the trade. The Cross-Cut Saw business is a little demoralized, manufacturers having found it expedient to disregard the new list. We are now making net prices for quantity orders, the regular price, however, being for Improved Tooth 80 cents per foot, discount 25 per cent. Lightning remain at $1 per foot, 30 per cent. discount. Brass Kettles rule a little higher; an advance of 5 cents per pound is asked. On Eastern Carriage Bolts the new list has been adopted, with discount 60 and 20 per cent. Philadelphia Carriage Bolts the ruinous price of 40 and 5 is now given, this extra 5 per cent being given to meet manufacturers' prices to the same class of trade.

Messrs. BLAKISTON & COX, 333 Walnut street, under date of June 30, report as follows: *American Pig* sells slowly and at uncertain prices. The volume of trade during the first three months of the year was large, many buyers entering the market at the then low but rising prices, and contracting for the delivery of their purchase much later than usual, fearing high prices, as was the case in 1872. The last three months have witnessed a dulness and inactivity in almost all branches of the business that has scarcely been equalled for years. Foundry Iron No. 1 started in January at $45, rapidly advanced to $50, was held at that figure until about April, when the price became weak, holders anxious, and buyers looked on the market with suspicion, only purchasing as their need required. The business of the six months just passed will doubtless prove satisfactory to the large number of Lehigh and Schuylkill furnace men, but they were sanguine of better results. All look to an active and profitable trade in the fall and coming six months. No. 1 is held firmly, while the lower grades are still weak. We quote: No. 1 Foundry at $46·50 to $48, No. 2 Foundry at $43 to $45, here; Gray Forge at $34 to $36, and White and Mottled at $30 and $32, at furnace. Scotch Pig is quiet and not quoted. Bar Iron sells at 3 9-10c. to 4c. at the mill.

PITTSBURGH.

June 28, 1873.—General business continues very quiet, as it usually is at this season of the year, and the indications are that it will continue so until about the 1st of next August. The greatest drawback to business, and one which interfered seriously with the calculations of our merchants and manufacturers all spring, a tight money market, has been removed, but there is not much call for it, in consequence of trade being dull; hence it is a matter just now of but little importance. Some of our large manufacturing establishments have been stopped already, and others, including nearly all the rolling mills, will do likewise within the next few weeks. In regard to the future the outlook is very unsettled—to use a common phrase, considerably mixed; trade was so contrary to what was expected during the spring, rendered so by an unusual state of affairs, that it has created a feeling of uncertainty and distrust. However, it is hoped that there will be an active demand for all kinds of manufactured goods this fall, and these hopes are strengthened somewhat by the fact that stocks, both in the hands of jobbers and consumers, must, of necessity, in consequence of the very limited purchases all this year, be very much reduced. The pig iron trade has been unusually dull this week, and no immediate improvement is expected. The demand is confined entirely to supplying immediate wants, which are very meagre, and prices are weak and the tendency is still downward. However, the feeling begins to prevail that the bottom has been almost if not altogether reached; hence, producers, excepting those who by sheer force of circumstances are compelled to do so, are disposed to hold, and the consequence is the offerings are comparatively light, and sellers are hopeful that the worst is over, and it is to be hoped that their expectations may be fully realized. Good Red Short Mill Irons have declined fully $15 per ton as compared with the first of the year. We now quote at $35 to $36, whereas in January last the same grade sold at $50. The mills, as a rule, have very limited stocks, as they have bought just as they needed it all season, and if the outlook should be at all favorable for the fall trade in August, it is expected that they will buy pretty largely. White and Mottled Irons continue dull, and may be quoted at $32 to $33. Foundry Irons also dull, the demand, as a rule, being for small lots, and prices are so irregular that it is difficult to quote correctly. There are a variety of Irons classified Nos. 1 and 2, and of course sold at different prices. Sales were reported this week at $42 for No. 1 and $48 for No. 2; however, $38 to $43 will cover the whole ground. Charcoal Irons are quiet, but prices are without quotable change; $47 to $55 for Warm and $60 to $65 for Cold Blast. Blooms continue dull, but prices are still maintained, ranging from $100 to $115 per ton, according to quality. Scrap Iron is very dull, and, in sympathy with Pig Iron, has declined very materially within the past few weeks, and even at the decline there is little or no demand for it. Trade in Finished Irons continues very quiet, as it always is at this particular time, but manufacturers are hopeful that there will be a good demand when the fall trade opens up next month. No change in prices; three and eight-tenths is the rate for merchant bars, but three and five-tenths is the actual selling price. Nails also quiet and unchanged at $4·50 @ $4·75, cash and time. There is a continued fair demand for some kinds of Steel, and a fair business in the aggregate, and prices are well sustained. The Steel mills, from all

that your correspondent can learn, have done very well during the past year; it being so much cheaper than English has caused a largely increased demand. There has been an improved demand for tools recently, and the factories report that they are very busy and are likely to continue so for some time to come. Manufactured Copper continues dull, but manufacturers are hopeful that the recent reduction in prices will stimulate trade soon. Window Glass continues quiet, but, as noted in my last, nearly all the factories have been stopped, and there is a firmer feeling; in the event of an increased demand a reduction in discounts is not improbable. The season all through has been exceedingly unsatisfactory to manufacturers, and it is earnestly hoped that there will soon be a change for the better. There is an active demand for White Lead, and all the factories are sold ahead—some of them are reported considerably behind with their orders. Prices are firmly maintained; 12c. for strictly pure, in ton lots, and 12¼c. in a jobbing way.

The Pittsburgh *Commercial*, of June 28, says: We can report no change in the market for Pig Iron this week. The sales were not large, as even the few furnace firms who were willing to meet the views of the buyers did not find purchasers for large lots. The stocks in hands of the rolling mills are very light, and it is expected that the demand will be active when the market opens up again; but it is uncertain when this will be, as many of the mills are stopping now for stock-taking and repairs, and will not start up again until the demand for manufactured Iron and Nails is greater than it is at present. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM L. S. ORE.
200 tons close gray open forge ......$35 00—cash.

CONNELSVILLE COKE.
300 tons close gray........$33 00—4 mos.
200 tons white..............32 00—4 mos.
200 tons gray forge.........35 00—4 mos.
50 tons silvery mixed.......39 00—4 @ 5 m.
50 tons No. 1 mill..........35 00—4 mos.

ANTHRACITE.
230 tons white red short.......$32 50—5 mos.
110 tons white red short.......33 00—5 mos.
90 tons No. 1 foundry..........42 00—4 mos.
30 tons No. 2 foundry..........39 00—4 mos.
20 tons No. 2 foundry..........37 50—4 mos.
10 tons extra No. 2 foundry....43 00—4 mos.

CHARCOAL.
50 tons No. 1 foundry Hanging Rock.$55 00—4 mos.

EASTERN CHARCOAL.
10 tons cold blast, No. 2.........$58 00—4 mos.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, corner of South Charles and Lombard streets, report the following prices, under date of July 1, 1873: We have still to report a quiet market and want of confidence in present values. We note a decline of 1-10c on best Bars, and desirable orders could be placed at less than quotations.

AMERICAN REFINED BAR IRON.
1 to 6 wide by ⅜ to 1 thick. } 4c. to 4·1c. per lb.
1 to 4½ wide by 1¼ to 2 thick. }
Round and square, ordinary sizes, from ⅜ to 2 inclusive ......4·1c. to 4·3c. "
Hoop Iron, 1¼ wide and upward..5c. to 5½c. per lb.
Band Iron, from 1½ to 4 in. wide..4½ to 4¾c. "
Horse Shoe Iron ⅜ to 1 wide by ⅜ to ½ thick.......5 to 5½c. "
Norway Nail Rods..........8½ to 8¾c. "
Black Diamond Cast Steel, Flats, Squares and Octagons, ordinary sizes......17c. "
Machinery Steel.........12c. "
Cast Spring Steel........11c. "
Homogeneous Steel Plate.........13c. "
Perkins' Horse Shoes, per keg of 100 lbs.....$6·37½
" Mule Shoes " ...... 7·37½
Common Horse Nails, from 14c. to 18c per pound.
10 9 8 7 6
Putnam Horse Nails..23 24 25 26 28c. per lb.
R. R. Spikes.........4½ by 9-16 at 5c. per lb.

CINCINNATI.

Messrs. ADDY, HULL & CO., under date of June 30, write us as follows: Market quiet and prices a shade easier. The demand is chiefly for small parcels for immediate consumption. A few round lots have been taken on private terms, understood to be below current quotations.

HOT BLAST CHARCOAL.
Hanging Rock No. 1..⅌ ton..$52·00 @ —4 mos.
" No. 2.......47·00 @ 50·00—4 mos.
" Forge......39·00 @ 40·00—4 mos.
Tennessee No. 1......52·00 @ —4 mos.
" Forge......39·00 @ 40·00—4 mos.
Alabama No. 1........52·00 @ —4 mos.
Missouri No. 1.......53·00 @ 55·00—4 mos.
" No. 2.......49·00 @ 51·00—4 mos.

HOT BLAST STONE COAL.
Missouri No. 1.....⅌ ton..$51·00 @ —4 mos.
" Forge....38·00 @ 39·00—4 mos.
Ohio No. 1.......44·00 @ 47·00—4 mos.
" Forge.....37·00 @ 38·00—4 mos.
Scotch Pig No. 1.......

CHARCOAL.
Hanging Rock Car Wheel ⅌ tn.$60·00 @ 65·00—4 mos.
Missouri "..... 60·00 @ 62·00—4 mos.
Kentucky "..... 58·00 @ 60·00—4 mos.
Tennessee "..... 58·00 @ 60·00—4 mos.
Georgia "..... 60·00 @ 65·00—4 mos.
Alabama "..... 60·00 @ 63·00—4 mos.
Machinery and Forge......58·00 @ 60·00—4 mos.
Blooms.......112·00 @ 115·00—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of June 30, writes us as follows: Market dull and lower for all grades of Hot Blast Iron. Cold Blast is firm at full figures. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.
No. 1 F'dry, from Hanging Rock Ores..$52·00 @
" 2 " " " ...45·00 @ 46·00
" 1 Forge, " " ... 38·00 @ 40·00
" 1 F'dry, from Tennessee Ores.....50·00 @ 52·00
" 2 " " " ....44·00 @ 46·00
" 1 Forge, " " ....38·00 @ 40·00
" 1 F'dry, from Alabama Ores.....50·00 @ 52·00
" 1 " Iron Mountain Ores..52·00 @ 54·00

HOT BLAST STONE COAL.
No. 1 F'dry, from Missouri Ores......48·00 @ 50·00
" 2 " " " ......43·00 @ 44·00
" 1 Forge " " ......38·00 @ 40·00

COLD BLAST CHARCOAL.
Car Wheel from Hanging Rock Ores.. 60·00 @ 65·00
" Tennessee Ores...... 56·00 @ 58·00
" Alabama Ores...... 60·00 @ 62·00
" Georgia Ores...... 60·00 @ 62·00
" Missouri Ores...... 60·00 @ 62·00
" Kentucky " ...... 60·00 @ 62·00

SAN FRANCISCO.

JUNE 19.—*Hardware*—Business is improving. We quote Amoskeag Axes, unhandled, $14 to $15; do. handled, $18·50 to $19·50; do. Puget Sound Axes, unhandled, $14·50. Hatchets—Amoskeag, Shingling No. 1, $7·25; No. 2, $8; No. 3, $8·50; do. Claw, No. 1, $7·75; No. 2, $8·50; No. 3, $9·25; Collins' Handled Axes at $17·50 to $20, according to weight. *Metals*—The sale of 120 tons No. 1 Scotch Pig Iron at $50, noted in our last, is said not to be a fair criterion of the market. The Iron came via Portland, Oregon, and had to be sold from wharf upon arrival. Jobbing sales, $52·50 to $55. In manufactured goods the trade report an active business at satisfactory prices. *Nails*—Imports from January 1st to June 16th: kegs, 46,982. In a former issue we noted the purchase by a leading house of all the Oxford and Boonton mills here and to arrive for several months to come—say 20,000 kegs—upon terms withheld. The concentration of the entire product of two leading mill agencies adds new strength to the market. The trade prices remain as heretofore: $5·75 for 10d. to 60d.; 8d. and 9d., 25c. per keg above 10d.; 6d. and 7d. 50c. do. do. 10d.; 4d. and 5d., 75c. do do 10d.; 3d. $1 50 do. do. 10d.; 2d. and 3d. fine, $2·25 do. do. 10d.; Cut Spikes, all sizes, 25c. above 10d. Thus the jobbers' range is $5·75 to $8·75.—*Com. Herald.*

CHICAGO.

JUNE 28.—*Hardware*—Market during the past week has been quiet and prices without important change. *Iron, Steel and Nails*—The market for Merchant Bar Iron has been very dull during the past week, and prices have declined 2-10c. Steel is steady and firm at our quotations. Cut Nails are weak and lower at $4·87½ rates and 12¼c. off in 100 keg lots. Horse Nails and Horse Shoes are steady at our quotations. *Pig Iron*—The market for Scotch Pig is dull and without important change. American Pig is quiet. *Tinners' Stock*—The market for Tin Plate has been firm and prices without important change. Prices here are steady and unchanged for all descriptions.—*Journal of Commerce.*

BOSTON.

June 28.—There is no further change in the market for Refined Bar Iron, but the softening tendency continues. There have been sales as low as $92, but $95 is the ruling price. Business is dull, and some of the rolling mills are shut down. The Nail manufacturers are to close most of their mills for a few weeks. Pig Iron is in light demand, and foundrymen are buying in small lots only. We reduce our quotations of both American and Scotch. We quote yard lots of American Pig Iron at $48 to $52 per ton, including No. 2 extra at $48 to $50, and No. 1 at $50 to $51. We quote Eglinton at $50 to 52, Coltness at $55 to $57, Gartsherrie $57, Charcoal at $58 to $62.

FRANCE.

(*Le Commerce.*)

PARIS, June 19, 1873.—*Iron.*—Iron industry in France, Belgium and England is at present in a state of paralyzation, which does not seem likely to come to an end for some indefinite time, mainly attributable as it is, no doubt, to the high cost of coal, which has declined nowhere but in England, and there but a trifle, and without reviving Iron industry in that important quarter. In France, in the Champagne, some orders, it is true, have been received, but they do not amount to much, intended, as they are, to merely fill some immediate and urgent requirements. As soon as they are executed the market will be certain to relapse into apathy. The only hopes now entertained seem to be to the expectation of a general revival in trade, based upon a good grain crop, but we are afraid that another disappointment awaits the Iron manufacturers under this head, barely an average crop being in prospect. Besides, effects from such causes will only be felt late in autumn.

BELGIUM.

(*Le Commerce.*)

BRUSSELS, June 18, 1873.—*Iron*—Iron affairs in Belgium are in no better position than what they were during the previous week; on the contrary, a good many establishments have preferred stopping work altogether, rather than go on manufacturing without realizing any profits therefrom, or making so little that the work may as well be left undone. Of Iron, local consumers alone are purchasers, and to but a moderate extent, No. 1 commanding 300 francs, No. 2, 315, and No. 3, 330; large lots would have to go lower. The only thing that has been moving off steadily and well has been Sheet Iron, at 420 francs, No. 2; 440, No. 3; and 540, No. 4; all per ton.

GERMANY.

(*Borsenblatt.*)

BERLIN, June 13, 1873.—*Metals.*—The unsatisfactory state of affairs produced by stock gambling in Germany has unfortunately reacted very much upon the trade in Metals of all sorts, and nobody feels disposed to do any thing if he can help it. Everybody prefers to wait; while, on the other hand, the anxiety to sell, is of a pressing nature, frequently. The general tendency of prices is consequently a drooping one. Very little doing in *Pig Iron*, and holders would willingly make concessions. Prices have declined for Scotch Pig to 75 to 82 silbergroschen; English, 68 to 73; and Silesian Coke Iron, 68 to 69, the 50 kilos., at the works. Rails for rolling purposes, 2 11-12 to 3 thalers; Rolling Iron, offered at 5¼; Boiler Iron, 7¼; Thin Sheet Iron, 8¼ to 8¾, the 50 kilos., in larger lots. *Tin* is weak, Banca, 46 to 46¼; Prime Lamb, 45¾ to 45¼ thalers the 50 kilos., and a little higher in some cases. *Copper* is quiet, Good sorts, English and Chili, 30 to 31, and higher in some instances. *Spelter* is unaltered, W. H. Giesche's Heirs', in lots, 9¼ to 9 5-12; inferior Silesian brands, ⅛ lower. *Lead* is firm, Tarnowitz, Hartz and Saxonian, 8¼ to 8¾ the 50 kilos.; at times, even better. *Coal* and *Coke* are offered as follows: English Nut, 33; Coke, 30 to 31 the 40 hectoliters; Silesian and Westphalian Smelting Coke, 26 to 35 silbergroschen the 50 kilos., delivered by rail at this city.

(*Borsenhalle.*)

HAMBURG, June 13, 1873.—*Of Metals, Lead* remains firm, although inactive: German, 24¼ to 25¼; English, 25 to 26; Spanish, 25¼ to 27. *Copper*, without change, Northern sorts, 96 to 104. Tin moves off in small quantities for current consumption; Banca, 1·50 to 1·52 marks; English, 1·52; and Rods, 1·54 to 1·55. *Spelter* is firm, without anything transpiring, at 27¼.

HOLLAND.

ROTTERDAM, July 1, 1873.—*Per Telegraph.*—Banca *Tin* has improved to 83 guilders.

EAST INDIES.

(*Ernsthausen & Oesterley.*)

CALCUTTA, June 17, 1873.—*Metals.*—English tile *Copper*, 36·12 rupees; *Spelter*, equal Silesian, 10·12; good hard quality, 7·8; *Yellow Metal*, 32·8. Exchange, 1/11 1-16 to 1/11¼.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending July 1, 1873:

Hardware.

Austin, Baldwin & Co. Cases, 14
Boker Hermann & Co. Mdse. pkgs., 1; Guns, cs., 7; Screws, cks., 1
Bodenheim, Meyer & Co. Cases, 29
Barton, Alexander & Waller, Wire, cks., 5
Beam & Murray, Packages, 3
Clark, Wilson & Co. Mdse. pkgs., 1
Campbell H. P. Casks, 1
Dodsworth J. Cases, 6
Degraw, Aymar & Co. Casks, 1; Chains, 6
Frasse P. A. & Co. Cases, 16
Field A. & Co. Anvils, 51; Casks, 4; Packages, 53
Harmar, Hayes & Co. Mdse. pkgs., 3
Hildick & A. H. Chains, pcs., 5
Hayden & Tompkins, Cases, 2
Jackson Wm. Casks, 2
King H. & J. W. Cases, 2
Lawton & Lenox, Wire, lots, 138
Merchants Dispatch Co. Arms, cs., 11; Packages, 4
Mason John W. & Co. Wire rope, coils, 4
Mills N. & Co. Cases, 2
Moss F. W. Files, cks., 5
Noyes, White & Co. Cases, 3
Peace Chas. Cases, 4
Russell & Erwin Mfg. Co. Files, cks., 4
Seymour W. N. & Co. Cases, 2
Shaw J. W. Casks, 3
Van Wart & McCoy, Mdse. pkgs., 3
Wiebusch F. Casks, 1
Williams & Guion, Crates, 1
Wacfelaer & Duyster, Crates, 9
Order. Files, cks., 4; Packages, 10; Guns, cs., 6

Iron.

Bussing, Crocker & Co. Pig, tons, 730
Burdett & Pond, Scrap, tons, 9⅞
Congreve Chas. & Son, Rails, 6625
Henderson Bros. Pig, tons, 150
Hopkins H. & J. Hoop, bdls., 2000
Holdane, Hopkins & Stokes, Hoop, bdls., 483
Kneeelpfel Wm. Scrap, tons, 5
Laughland & Co. Haybands, bdls., 685
Lang W. Bailey & Co. Mdse. pkgs., 1
Montell & Bartow, Scrap, tons, 2
Naylor & Co. Fish plates, bdls., 467
Pierson & Co. Bars, 2149
Smith G. G. & Co. Bars, 1809
Smith G. A. & Co. Old rails, tons, 250
Tillotson L. G. & Co. Galvanized, lots, 140
Whitney A. R. Angle, bdls., 100
Order. R. R. bars, 5494; Scrap, tons, 169; Pig, tons, 300; Old rails, 772; Bars, 6612; Sheet, bdls., 320
Without bills of lading. R. R. bars, 470

Steel.

Abbott & Howard, Bundles, 40; Cases, 34
Cockeyre J. W. Bundles, 224
Hogan John, Bundles, 27; Cases, 23; Casks, 1
Jackson Wm. Cases, 2; Bundles, 318
Kennedy J. S. & Co. Tires, 28
Moss F. W. Bundles, 92; Bars, 12
Vose, Dinsmore & Co. Mdse. pkgs., 2
Van Wart & McCoy, Bundles, 598
Wardlow W. C. Cases, 4; Bundles, 180
Order. Sheet, cs., 2; Tires, 8; Bessemer rails, 1767; Bundles, 260; Bars, 3; cases, 8; bdls., 35; Cases, 4; Spring, bdls., 361

Metals.

Brown, Shipley & Co. Lead, pigs, 1010
Brown Bros. & Co. Tin, slabs, 142
Baring Bros. & Co. Tin, slabs, 142
Bank of British North America, Tin, slabs, 142
Coe Brass Co. Brass, bbls., 38
Dickerson J. S. & Co. Tin plates, bxs., 2720
Douglass Jas. Scrap, bbls., 772
Douglass Wm. Scrap, bbls., 4; bxs., 18
Figuers J. Lead, pigs, 2120
Osborn J. Son & Co. Copper, tons, 16
Phelps, Dodge & Co. Mdse. pkgs., 9; Tin plates, bxs., 2447
Windmuller L. & Roelker, Spelter, cks., 10
Order. Antimony, cks., 50; Lead, pigs, 2787; Spelter, plates, 3992; Tin and terne plates, bxs., 809; Tin, slabs, 500

Our English Letter.

Review of the British Iron, Hardware, and Metal Trades.

(*From our Regular Correspondent.*)

SHEFFIELD, Eng., June 16, 1873.

We appear to be, at last, on the eve of that marked fall in prices which has so long been foreseen by some and advocated by others. On Friday one of the leading South Staffordshire (Wolverhampton and district) firms issued circulars to its customers announcing a drop of not less than £3 per ton in cut nails. Quotations, which have so far been £22 per ton, will, therefore, be lowered to £19. This firm (Messrs. Paul Elwell & Co., Wolverhampton) led off last year to lower prices, and there is a general impression that their action is likely to be imitated largely. There is, and can be, no doubt that unless the iron masters put down quotations promptly, and to an appreciable extent—say, 20 per cent.—trade will be in a stagnant condition by this time six months. Reports keep coming to hand from the United States intimating that not only is British iron at present beaten out of the market, but that in a year or two hence it will not be wanted at all. The same arguments are applied to cutlery and a variety of hardwares which you are now glad to get from this country. Such statements are not very encouraging to manufacturers in any of the branches of industry indicated, inasmuch as America has been, and is, the chief market for British iron, steel and cutlery. If this great outlet be closed, what, then, is the British maker to do? He cannot at once open up another channel for his productions, and his course of business is usually so routine that it will take some years to bring him round to a clear apprehension of the fact that he has been completely expelled from the States. In the meantime your industrious makers will be pushing ahead, and will, in a few years, we may suppose, be able to do a little exportation—not, let us devoutly pray, to *this* country! That would, indeed, be too bad. The only remedy for such an eventuality will be an immediate reduction of prices, an effective organization of iron masters against coal owners, workmen and others, and Parliamentary action for the constitution of some properly authorized tribunal or official in every district, to settle all labor disputes. Sooner or later Parliament will be obliged to interfere in this respect in order to prevent the present ignorant and brutish waste of time and money caused by strikes. At this time several labor disputes exist. The Fife (Scotland) miners are out on strike, having taken umbrage at the new special rules made to suit the requirements of the mines act. Two hundred mill furnacemen are on strike at Messrs. Richardson & Sons' iron works at West Hartlepool, in consequence of the blooms for rail making being alleged to be below the proper quality of iron. In the London building trade matters are becoming rather serious, the men being determined not to give way, and the masters having formed an association to resist their demands.

I have come across an anecdote illustrating very aptly the effect of the present high wages upon miners and other uneducated workmen, and will give it at length. From six to eight thousand miners enjoyed a holiday at Perth on Monday. Two incidents in connection with the trip are reported to have occurred at railway stations not twenty miles from Thornton Junction and Dysart. In one case two young miners, about sixteen years of age, had in their possession a bottle of brandy, and one of them was overheard on the platform crying out in lusty tones, "D—n it, Jock, come on an' let's be fu' afore we get tae Perth." The young hopefuls proceeded to empty the bottle, and appeared in a fair way to reach the desired state of intoxication by the time they arrived at their destination. In the other case, a railway official observed a young lad of some thirteen summers with a heavy Albert chain displayed across his breast. The official, wondering if there was a watch attached, asked the young miner what o'clock it was. To his astonishment, the youth, with perfect composure, drew from his pocket a gold watch, and, holding it up to the functionary, said, "Look yersel', for I dinna ken the time o' day." Both the above stories are, we believe, perfectly true, and may be added to those that have been current in England lately as to the way in which miners are spending the high wages they are now earning.

The annual report of the Amalgamated Engineers Society, the largest trades union in the world, shows that the society started with 7000 members in 1852, and at the end of 1872, to which date the report is brought up, there were 41,075 members, 5294 having joined during the year. The total income of the society for 1872 amounted to £105,373. 14 5, and the balance in hand from previous year was £116,326. 6 7, making a grand total for the year of £221,704. 1/. The expenditure for the past year had been £63,390. 5/2, being £41,987. 9 3 less than the receipts, leaving the society with a clear balance at the end of December, 1872, amounting to £158,313. 12 1. In the £63,390 expended during the year, only £6000 had been expended in trade disputes, the other items consisting of payments for the various benefits of members, such as out of employment, sick, funeral, and superannuation money, &c. Total disbursements during the 22 years of the society's existence: Paid to members out of employment, a very small proportion having been expended in trade disputes, £546,265; sick pay, £234,419; superannuation pay, £80,379; accident pay, £21,000; funeral money, £74,120; benevolent grants, £19,117; assistance to other trades, £11,136, making a total expenditure of £986,436. These figures clearly demonstrate the powerful effects of combination.

In dealing with the iron districts, in detail, I find that Glasgow warrants now stand at 111 6, with a dull, drooping market, the stock in Connall's stores being something like 55,000 tons. Makers figures are not much altered, and may be quoted as under: Gartsherrie No. 1, 130; No. 3, 115; Coltness No. 1, 130; No. 3, 116; Summerlee No. 1, 130; No. 3, 115 6; Carnbroe No. 1, 123; No. 3, 116; Monkland No. 1, 122; No. 3, 115; Clyde No. 1, 117 6; No. 3, 115; Govan No. 1, 115; No. 3, 114; Langloan No. 1, 130; No. 3, 117 6; Calder No. 1, 130; No. 3, 115; Glengarnock No. 1, 122 6; No. 3, 116; Eglinton No. 1, 116; No. 3, 114; Dalmellington No. 1, 115; No. 3, 113; Carron No. 1, 130; Shotts No. 1, 130; No. 3, 117; Kinneil No. 1, 125; No. 3, 117.

Shipments of pig iron from Scotch ports during the week ending 7th June amounted to 14,309 tons, being 6851 less than in the previous week, and 5824 below the corresponding week of 1872. Imports at Grangemouth of Middlesbrough pigs were 1275 tons, being 55 less than in the previous week, but 483 more than in the corresponding week of last year. In the Cleveland district pig is going down in price, No. 3 being quoted 112 6, and the make is decreasing appreciably, it having been 158,000 tons in May as compared with 165,000 in April. At Sheffield the cutlery trades are slackening considerably, mainly owing to the paucity of orders from your merchants. Some few firms are, nevertheless, doing a good business with the States, chiefly, I believe, because they are sharp enough to utilize machines, and any other possible labor saving contrivance. Some of the smaller and likewise a few of the more actively employed works resumed work after the holidays, on Thursday morning last, but the great establishments—the Atlas and Cyclops, for instance—only recommenced operations on Monday, and did not get thoroughly in full swing until Tuesday morning. There seems to be a little but not a very remarkable accumulation of orders during the few days' cessation from work. These were acceptable to some few firms, but as a rule those houses having most producing powers are by no means desirous of having their order books further filled up. This, I may remark, is especially the case with several leading steel manufacturing firms. A little uneasiness is beginning to be felt at the great strides that American manufacturers are making in the production of steel, and it is felt that if our makers are really determined to hold their American connection together they must do so by reducing prices. This, in some cases, they can very well afford to do, as profits in one or two departments of the steel trade are by no means small. The rail mills are still as busy as at any preceding time on Russian, German, American, and Indian account, together with some few minor commissions from the larger colonies. There is an excellent demand for boiler plates, the Atlas Park-Gate and other mills in the district being fully occupied on home and foreign commissions.

The inquiry for buffers, springs, axles, and tires, is well sustained; fair lots going to Belgium, France, Germany, Egypt, and elsewhere. These branches of trade give employment to a large number of hands, and are not now in a less encouraging condition than heretofore. In the armor plate mills as many plates, turrets and other like "fittings," are being turned out as fast as the furnaces will heat and the machinery deal with them, the inquiry being good and increasing. The gun foundries are busy, and a steady trade is doing in pistons, cranks and other marine engineering requisites.

At Birmingham the works are as yet fairly busy, but the future does not promise well. Prices are unchanged, and remain on the basis of £16 for best bars. In Wales everything is working smoothly, rails being yet the main exports—mostly to Russia, America and Sweden. The tinplate trade is dull, but prices are not lower. The following remarks on the tin trade I extract from a circular: The deliveries during May were 542 tons Banca; 300 tons Billiton, from Holland, and 502 tons Straits, etc., from London, making 1342 tons, from which must be deducted 206 tons Billiton and Banca sent here, making the net delivery for the month 1136 tons, against 879 tons same time last year. The total deliveries of the five months this year are 4762 tons, against 5198 tons same time last year. The exports from the Straits to London in May, as advised by wire, are 280 tons, against 870 tons in May last year, making, since the 1st of January, 2640 tons, against 3648 tons same time last year, being a deficiency of 1000 tons. The quantity of Straits afloat for America is 340 tons, against 1049 this time last year.

The metal trade does not evince much recovery, but the reduction of the bank rate may have a stimulating effect. At the beginning of last week copper, which was adversely affected on the announcement of heavy charters from Chili, declined on Tuesday to £81 to £82, cash, for Chili bars, and £90 to £91, cash, for Wallaroo. On Wednesday, business in Chili was rather brisk, and the market closed firm, at £82, cash. On Thursday, the continued activity of demand caused a further advance to £83 to £83. 10/ for good ordinary brands, and £84 for Walker. English is unchanged. Tin has in like manner recovered, after marked depression. On Tuesday the Cornish smelters again reduced the standard of tin ore 2/ per cwt., making £6. 2/ and £6. 4/, respectively for superior common and superior fine. In the London market tin fell to about £132 or £133 for Billiton, but on the following day Straits and Billiton realized £134, cash. On Thursday the reduction of the bank rate caused a further advance to £134. 10/ to £135, cash, closing buyers at £136, which was paid for Banca. Spelter is dull, and in limited demand. The quotations are: Silesian, £27. 10/ to £28; WH, £29. Belgian and Rhenish, £27, both in London and outports. English lower, £27. 10/ to £28. 5/, delivered in Birmingham. On Wednesday sales of VS spelter made £26, London and outports. London rolled zinc sold at £31. 5/ to £31. 7/6. Lead is somewhat easier, £23. 10/ to £23. 15/.

At the resumed sittings of the coal committee, last Monday, Mr. Isaac Lowthian Bell, the president of the Iron and Steel Institute, was under examination the entire sitting. He stated that he was largely connected with iron works and coal mines on the Tyne, and in the counties of Durham and York. The idea that the rise in the price of coal was due to any combination of masters and men was, in his opinion, utterly absurd. He considered it was due to increased demand on producers, and a notable falling off in the supply. There used to be great waste, and reliance was placed on the coal in stock; whereas the coal owners were now thrown on the unworked coal. Anterior to 1850, the quantity of pig iron produced in the north of England was 110,000 tons, and the total consumption of coal for iron purposes was under half a million tons a year; and, in 1872, there were 1,968,972 tons of iron produced. The number of puddling furnaces had increased from 250 in 1850 to 1650 in 1872. Many of the coal owners suffered when the rise of coal took place, because they had already entered into contracts for coal and coke at a fixed price per ton for three years. So great was the demand for coal that they, during the late pressure, brought coals from South Wales to Newcastle. There had been a falling off in the quantity of coal carried on the Northeastern Railway of half a million tons between 1871 and 1872, and they looked likely to have a falling off in 1873, as compared with 1872, of nearly a million tons. In one of his own collieries, hewers used to work twelve hours per day for 4/7½, and would get 4½ tons each per day; now the same hewers could earn 7/5 per day of 9½ hours, and reducing the outfall to 3¼ tons per day. His firm were opening fresh pits for the supply of themselves and the market; and others were doing the same, and that was how the quantity was kept up. To raise artificially the price of coal would require a combination of the whole of the masters of the United Kingdom who met in the London markets, and that, of course, was hopeless. He had endeavored to get additional labor for the mines, but that meant building small towns at a price three times as much as it used to be. Many of the bar iron works in the North of England were being discontinued on account of the high price of coke and pig iron. In his opinion the whole of the coal of the North of England would be required to smelt the whole of the iron, and that the coal fields would be exhausted much sooner than the iron stone. Witness spoke of the economy of fuel in the manufacture of iron, a subject he went fully into in his address before the Iron and Steel Institute (published in these columns). He did not believe that the exhaustion of coal was so dangerously near as Sir William Armstrong had stated. The excess of demand for coal over supply in his own district was about 600,000 tons. An export duty on coal was not desirable. They were raising coal all over Europe as cheaply as we were doing it, but the whole quantity would not suffice to keep the English ironworks going. There was nothing to fear from foreign competition on the use of coal for the manufacture of iron. In America, notwithstanding the dearness and irregularity of labor, the increase in the manufacture of pig iron since 1871 was 18 per cent.; but still it was a fact that America afforded the largest market for English iron. In answer to Mr. Elliot (who has opened out some large coal and ironworks in Nova Scotia) witness said he had heard that there were large quantities of coal and ironstone in Nova Scotia.

On Thursday, Mr. J. B. Aitken, of the firm of Messrs. Berger, Spence & Co., chemical manufacturers and metal merchants, of Manchester, was examined. He gave statistics showing the rise in the price of coal in Lancashire, and then went on to say that in 1871 the quantity of pig iron smelted in England was 6,617,000 tons, whilst in 1872 it was 6,803,000 tons. In Scotland the figures for 1872 showed an increase of 7000 tons, and there was a great deal of stock consumed beside, about 50,000 tons having been got rid of altogether in Great Britain. In answer to a question from the chairman as to the cause of the excessive demand for coal, the witness said that there had been a great extension of railways in America, a large demand for iron for Germany, and increased home consumption, the alkali manufacturers requiring a great deal of coal—about 2 per cent. of the entire consumption in Great Britain. In consequence of the high prices, many manufactories were closed, and in others the hands were greatly reduced in number. The foreign demand for iron was checked by the increase of price; and he believed there had been no increase in the exports. In answer to Mr. Liddell, the witness said there had been no revival in the American demand since it was checked by the advanced prices. There was a great demand for Germany immediately upon the war, but he could not tell what that demand would be. The committee then adjourned.

The returns just issued by the Board of Trade for the month of May and the five months of 1873 terminating with that month, present several features of interest. The declared value of our exports for the month was £22,607,082, an increase on the corresponding month of last year of £1,835,779, or about 9 per cent. The total for the five months exhibits an increase of 7 per cent. over the same period of 1872, and 26 per cent. over 1871. In the month 1,241,942 tons of coal, coke and fuel were exported, with a decrease in quantity, but increase in value of £500,000, as compared with May last. Cardiff exported 240,000 tons of coal, Newcastle 329,000, and Sunderland 141,635. Newcastle also sent off 19,569 tons of coke. France took 211,000 tons, Germany 164,000 tons, and Russia 149,257 tons. The total quantity of iron and steel exported in May was 313,515 tons, valued at £3,966,428, a decreased quantity, but an increase in value. In the five months ending May 31, 1873, there were 1,281,075 tons exported as against 1,355,459 tons in 1872; but the values are respectively £15,995,280 and £12,841,459. Of pig iron, 188,617 tons, and of bar, bolt and angle iron 27,811 tons were sent off during the month, the values being shown in the annexed tabular statement. An important increase is observable in the declared value of arms and ammunition, amounting to nearly 78 per cent., arising from deliveries on account of the large German government contract, and, to a less extent, the disturbances along the west coast of Africa. The increase is from 30,403 in 1872, to 50,426 in 1873, the figures for the five months being 163,914 in 1873 as against 153,218 in 1872. Railway carriages increased from 9 in last May to 52 in this. Machinery and mill work rose from £976,651 in 1872 to £1,106,431 in last month. In unwrought copper and brass there is a falling off on the month's transactions, but an increase on the five months, there being a steady rise in wrought and manufactured copper in both instances.

Details will be found in the following tables:

RAILROAD IRON—ALL SORTS.

To	Month ended May 31. 1872.	1873.	Five Months ended May 31. 1872.	1873.
	£	£	£	£
Russia	86,863	214,930	127,052	430,378
Sweden & Norway	12,564	57,507	42,222	155,432
Germany	62,650	90,538	198,481	306,017
Holland	3,663	41,451	25,870	96,596
France	785	2,689	2,093	24,547
Spain and Canaries	5,068	18,638	48,428	88,727
Aust. Territories	25,046	313	27,690	1,658
Egypt	13,422	1,060	100,154	17,584
United States	417,625	275,505	2,021,582	1,309,232
Span. & W. Ind. Is.	....	2,028	5,500	33,046
Brazil	20,573	14,852	73,197	46,990
Peru	49,863	13,434	155,920	58,635
Chili	1,686	8,371	11,461	31,778
British N. America	91,268	146,222	207,460	262,361
" India	21,226	27,520	47,369	123,879
Australia	8,416	33,180	78,759	108,401
Other countries	78,300	160,033	320,738	529,194
Total	899,011	1,108,272	3,544,487	3,624,419

Of straps, sheets, and boiler and armor plates we exported in May, 1873, 23,594 tons, valued at £445,201; in the corresponding month of 1872 the return was 18,029 tons, and the value £270,742. In the five months we have exported a total of 92,974 tons, valued at £1,648,970. For hardware and cutlery the following is the return:

To	Month ended May 31. 1872.	1873.	Five months ended May 31. 1872.	1873.
	£	£	£	£
Russia	21,620	20,904	37,402	51,088
Germany	30,765	28,472	141,335	145,372
Holland	11,895	13,878	47,079	47,079
France	16,022	15,130	68,229	67,769
Spain and Canaries	8,117	11,346	41,186	42,492
United States	71,763	56,405	380,578	363,846
Spanish West India Islands	8,192	13,772	41,053	63,431
Brazil	22,603	23,279	103,495	118,801
Argentine Republic	15,578	22,505	80,548	87,741
British North America	50,410	37,795	97,133	78,693
British India	21,780	15,679	108,807	86,285
Australia	34,353	48,142	171,793	237,358
Other countries	125,741	133,617	592,079	660,037
Total	438,849	441,024	1,910,717	2,049,992

Iron says that the total exports of iron and coal for the week ending June 7th from the ports of Cardiff, the Clyde, Dundee, Hartlepool, the Humber, Ipswich, Liverpool, London, Middlesboro', Newcastle-on-Tyne, Newport (Mon.), North and South Shields, Stockton, Sunderland and Swansea: Railway iron, 20,493½ tons; pig, old, and scrap iron, 14,673¼ tons; rod, bar and angle iron, 3455¼ tons; plate, sheet and hoop iron, 2123 tons; galvanized iron, 405¾ tons; cast and wrought iron, 4394½ tons; coal, 182,372½ tons. The imports show an increase of about £6,000,000.

In telegraph wires and apparatus there is a large increase, both on the month and year. In May, 1872, the value was £11,618 as compared with £138,110 last month, while on the five months the increase is from £66,758 to £260,209. The following are the values of the principal articles:

MISCELLANEOUS ARTICLES.	Month of May. 1872.	1873.	Five Months. 1872.	1873.
Arms (small)	£31,062	£104,827	£177,749	£234,294
Ammunit'n (not gunpowder)	28,291	68,921	219,909	154,136
Carriages (Rlwy Passenger)	4,496	12,006	17,442	51,291
Carriages (Rlwy Truck)	20,331	15,795	67,919	86,533
Coals, &c.	826,135	1,324,726	3,212,283	5,311,355
Plate and plated wares, &c.	13,347	44,495	67,245	107,413
Tin plates	452,185	371,995	1,612,576	1,973,425
IRON.	1872. Tons.	1873. Tons.	1872. Tons.	1873. Tons.
Pig & puddled	£158,594	£118,617	£540,979	£536,522
Bar, angle, &c.	29,501	27,811	131,329	129,136
Railroad	87,617	85,975	369,878	374,795
Wire	3,062	2,842	13,547	13,844
Hoops, sheets, &c	18,029	23,594	78,821	92,974
Cast & wrought	26,878	29,232	101,732	114,673
Old iron	13,709	9,569	41,432	38,681
Steel, unwr'ght	4,370	4,146	18,118	16,978
COPPER AND BRASS.	1872. Cwts.	1873. Cwts.	1872. Cwts.	1873. Cwts.
Unwr'ht copper	39,553	26,751	118,155	133,054
Wrought ditto	17,236	19,186	76,427	89,348
Yellow Metal & Sheathing	21,024	15,128	88,476	86,884

THE

ARCTIC FREEZER.

SIMPLEST. QUICKEST.

BEST.

Send for Price List.

E. S. & J. TORREY,

166 Fulton Street, New York,

The Swift Mill.

Established in 1845.

Letter "B" Geared Counter Coffee or Spice Mill.

Stands nearly 2½ feet high. Is highly finished, colors deep Vermilion and Gold. We make more than 20 different styles and sizes.

Send for catalogue. Manufactured exclusively by

LANE BROTHERS,

Millbrook, N. Y.

WM. RESOR & CO., Cincinnati,

Manufacturers of the renowned Cooking Stoves, FASHION, for wood, and MONITOR, for coal and wood, and the greatest variety of Coal and Wood Heating and Cooking Stoves. A large stock constantly on hand, and all orders filled promptly. (Send for Catalogue and Price List.)

Four Sizes. Coal or Wood
Shaking and Dumping Grate,
and Swing Top.

THE

DIAMOND.

THE LATEST INVENTION.

SELF FEEDING, BASE BURNING

COAL STOVE!

With Solid Iron Fire Pot.
With Illuminated Anti-Clinker Opening.
With Patent Double Grate.
With Center Dump.
With Large Return Flues.

Takes the Lead of the Entire Family of Base Burners.

FOUR SIZES, Nos. 18, 23, 28, and 34.

MANUFACTURED BY

JEWETT & ROOT, Buffalo. JEWETT & ROOT, Chicago.
JEWETT & ROOT, Detroit. JEWETT & ROOT, Milwaukee.

Send for Catalogue and Prices.

Water Filter.

Crystal Spring. Jewett's Patent.

A perfect success, accomplishing results never claimed for any Filter ever before invented. This Filter is now the acknowledged Standard all over the United States and Canadas.

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MANUFACTURED ONLY BY

JNO. C. JEWETT & SONS,

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Foreign Hardware Commission Merchants.

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Sheffield, England, No. 23 Westfield Terrace.
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Middleton Building, No. 1 Rumford St., Liverpool.

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Hardware Commission Merchants.
BIRMINGHAM, - ENGLAND

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GEORGE H. GRAY & DANFORTH.
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At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for the **John Rimmer & Son's Celebrated Harness and other Needles.**

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New York—Edward Frith, 16 Cliff Street.
Boston—H. L. Richards, 18 Batterymarch, Street.
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SWISS BELL,

Made from pure SWISS METAL.

Very Musical. Very Pretty.

One of these Bells half the size of an ordinary Hand Bell can be heard further, and is more pleasing to the ear. This cut represents the full size of the smallest Bell, and are made either Polished, Silver Plated or Nickel Plated.

Send for Price List.

TAYLOR MFG. CO.

NEW BRITAIN, CONNECTICUT,

Exclusive Manufacturers.

SMITH, BURNS & CO.,

Manufacturers of

Galvanized and Japanned Sheet Iron Goods and Tin Ware.

Coal Hods. Patent Stamped Corrugated Riveted Bottom.
Fry Pans. "Excelsior" Polished.
Excelsior Broiler. Best and Cheapest in the market.
Combined Chamber and Commode Pail,
Ash Cans, Galvanized and Japanned,
Galvanized Water Pails, Well Buckets,
Chamber Pails, Tea Kettles, &c., &c.
Toilet Sets. Fancy and Grained.
Chamber Pails, Slop Pails, Foot Tubs, Baths, Water Carriers, Coolers, &c., &c.
Stamped and Piece Dish Pans and Plain Tin Ware.
Send for Illustrated Catalogue.
Warehouse, 45 Cliff Street, between Beekman and Fulton Streets, NEW YORK.

J. D. FARRINGTON, Jr.,

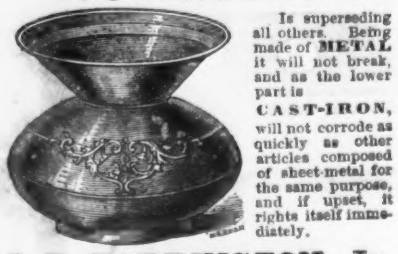
38 Murray Street, New York.

MANUFACTURER OF

Japanned, Plain and Stamped Tin Ware,

THE PATENT SELF-RIGHTING
CUSPADORE

Patented October 10th, 1871.



Is superseding all others. Being made of **METAL** it will not break, and as the lower part is **CAST-IRON**, will not corrode as quickly as other articles composed of sheet-metal for the same purpose, and if upset, it rights itself immediately.

Thirty-Six Different Styles.

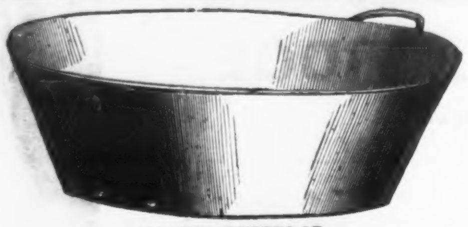
J. D. FARRINGTON, Jr,
SOLE MANUFACTURER.

Price List of Self-Righting Cuspadores:

Class A, Seven Patterns - - - - -	$15 00 per dozen.
" B, Eight " - - - - -	18 00 "
" C, Eight " - - - - -	20 00 "
" D, Eleven " - - - - -	24 00 "
Nickel Plated, No. 1 - - - - -	48 00 "
" " No. 2 (small) - - - -	42 00 "

Established 1836.

SIDNEY SHEPARD & CO.,



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FRENCH WARE, STAMPED AND JAPANNED
TIN WARE.

Also, a Large Variety of Useful Articles.

DEALERS IN

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Tinmen's Tools, Machines and Trimmings.

Please send for Illustrated Catalogue and Price List.

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AGENTS.—VAN WART & McCOY, 43 Chambers Street, N. Y.; SHEPHERD & LLOYD, 405 Commerce Street, N. Y.

Breast Hold-Back Co.

210 & 212 First Street, TROY, N. Y.

Sole Manufacturers of

COVERT'S PATENT METALLIC BREAST HOLD-BACK.

Made of the best Malleable Iron. The Snap is a new invention, and superior to any yet introduced. The spring is encased in the hollow shank of the snap, preventing dirt from getting to it, and without danger of being broken or disarranged. This article has been in use five years by Farmers, Teamsters, Stage Proprietors and Horse Railroad Superintendents.

It gives good satisfaction. It is cheaper and more durable than anything of the kind in use. For sale by the Hardware Trade.

Send for Circular and Price List.

WEST POINT FOUNDRY,

Established 1817. COLD SPRING, N. Y.

Paulding, Kemble & Company,

Office 30 Broadway, New York; Works at Cold Spring, Putnam Co., N. Y.

Steam Engines, Boilers & Heavy Machinery of all kinds, and Heavy Forgings.

FORD'S PATENT STOVE, for heating Air for Blast Furnaces.

Hornig's Patent Shearing and Punching Machines,

NAPIER'S PAT. DIFFERENTIAL CLUTCH, for starting and reversing Heavy Machinery.

Hepworth's Patent Centrifugal Machines.

Castings from Gun Metal, guaranteed 30,000 pounds per square inch.

CHASE'S BUTTON-HOLE CUTTER,

The BEST and CHEAPEST made.

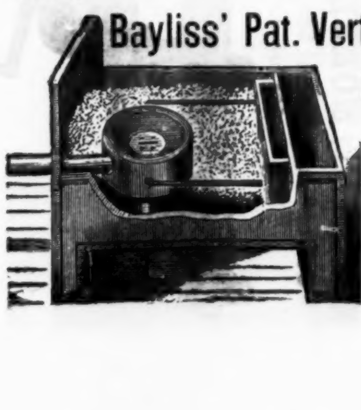
Manufactured and for sale by

GOODNOW & WIGHTMAN,

Boston, Mass.

$10·00 per doz. Liberal discount to the Trade.

Bayliss' Pat. Vertical and Horizontal Hot Blast and Water Tuyeres & Forges.



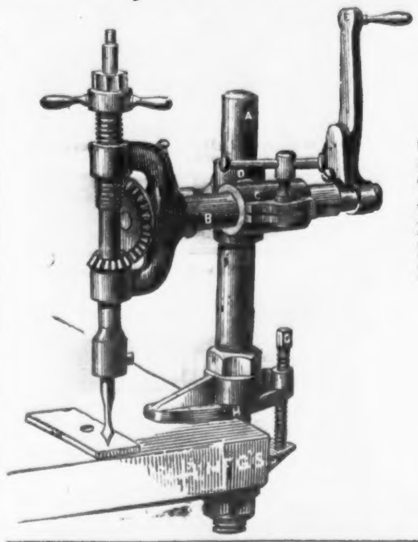
Can be placed in any forge of brick or iron; will not burn out or choke up; suited for light or heavy work, saving time and fuel, and warranted.

Send for Circulars.

JOHN BAYLISS,

147 East 54th Street, N. Y. City.

The Improved Patent Universal Angular and Ratchet Drilling Machine,



Adjustable to any angle, and easily carried to any part of the shop for making Repairs.

Over 4000 of these machines are now in use, and the demand is steadily increasing.

Dealers will find them of ready sale and at satisfactory profits.

These machines were formerly sold by Messrs Holland & Cody, and Duryea & Kelley, but since the Miller's Falls Co. purchased the patent and began to make them exclusively in their own shops, the quality and finish has much improved, and they are now really desirable goods. These Drilling Machines are for sale in most of the larger cities at our regular prices, but where they are not so kept we will supply them on demand.

No. 1, weight	26 lb.,	Drill	⅝ in. hole	Price, $34·00
No. 2, "	52 lb.,	"	1 "	" 38·00
No. 3, "	106 lb.,	"	1½ "	" 65·00

With usual trade discount.

MILLERS FALLS CO.,

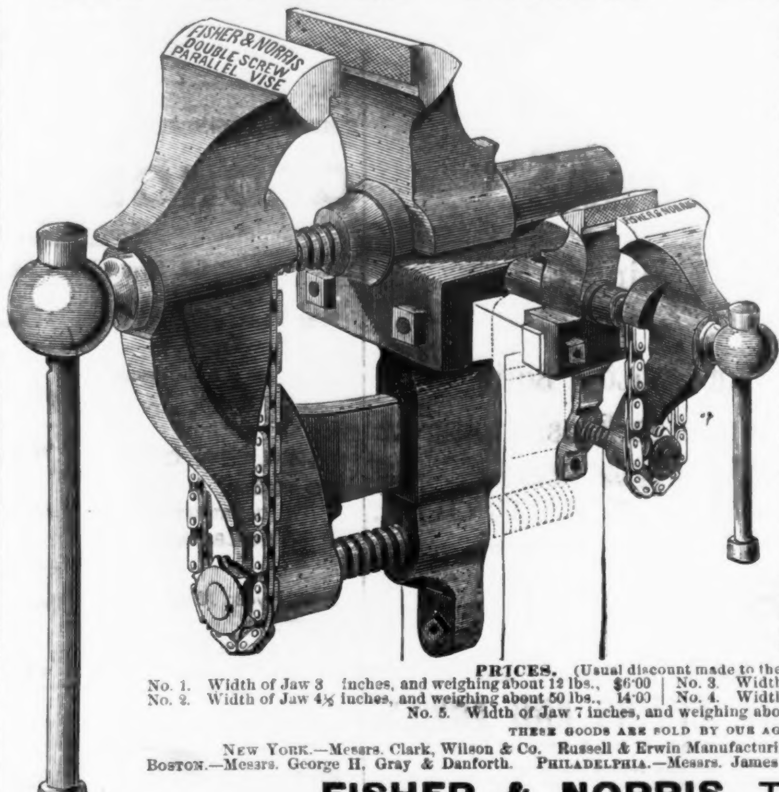
78 Beekman Street, New York.

Factory at Millers Falls, Mass.

ALSO MANUFACTURE

Barber's Bit Braces and Parallel Vises.

THE DOUBLE SCREW PARALLEL VISE.



More than twenty-five years' use of this Vise by Machinists, Tool Makers, Locomotive Shops, &c., has established its superiority over every other.

It is the only one which has all the strength and "grip" of the ordinary English Vise; and at the same time with the jaws *parallel* at every point of opening.

In all other "Parallel" Vises using only one screw, *less than one-third* of the power applied is effective on the work itself; beside, in those vises the large waste of power on the slide from *friction* and the *tendency to "jam,"* of the lower end of the jaw, if screwed up very hard, renders them unfit for heavy work.

In this vise the jaws are kept *always parallel* by the lower screw moving in or out exactly with the upper, lever screw, by means of the chain connecting both: also, by their relative position *two-thirds* of the power applied at the lever screw is received by any piece held between the jaws—thus enabling the heaviest work ever required of a vise to be done with this.

The Screws are forged of the best refined iron, and work in *solid cut thread* boxes. The Jaws are faced with *best* Tool Steel, welded on, file cut, and properly tempered for wear.

The Chain is very carefully made of case hardened inside links and rivets, and, acting only to *regulate* the position of the lower screw for different points of opening, has *no direct strain* of the work upon it; it is therefore as durable as the other parts.

Only the strongest material is used in this manufacture, and from actual experiment on the six inch jaw vise which has screws of 1⅜ inch diameter and lever 19 inches long, it has been found that applied at the lever Screw, it required to break either of the jaws, *eleven and one-half tons*, thus exhibiting a maximum strength far above *any* other vise of like size.

PRICES. (Usual discount made to the Trade.)

No. 1. Width of Jaw 3 inches, and weighing about 12 lbs., $6·00 | No. 3. Width of Jaw 5 inches, and weighing about 80 lbs., $18·00
No. 2. Width of Jaw 4½ inches, and weighing about 50 lbs., 14·00 | No. 4. Width of Jaw 6 inches, and weighing about 125 lbs., 24·00
No. 5. Width of Jaw 7 inches, and weighing about 160 lbs., $30 00.

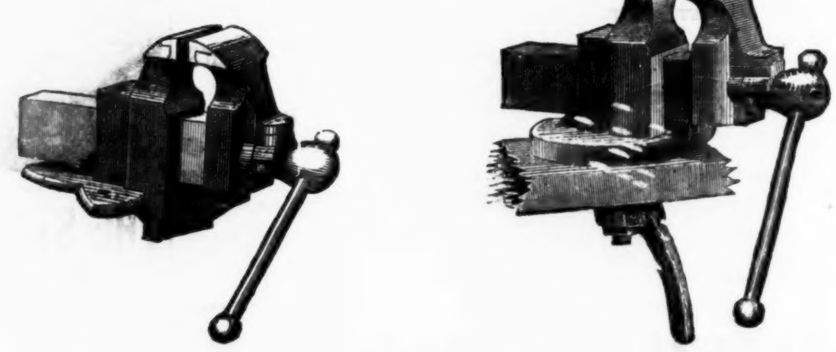
THESE GOODS ARE SOLD BY OUR AGENTS IN

NEW YORK.—Messrs. Clark, Wilson & Co. Russell & Erwin Manufacturing Company. Messrs. Durrie & Rusher.
BOSTON.—Messrs. George H. Gray & Danforth. PHILADELPHIA.—Messrs. James C. Hand & Co. BALTIMORE.—Mr. W. H. Cole.

FISHER & NORRIS, Trenton, N. J.,

Sole Manufacturers of these Vises, and of the "Eagle" Anvils.

HOWARD
PARALLEL BENCH VISE.



Manufactured at the

HOWARD IRON WORKS,

Buffalo, N. Y.

RUSSELL & ERWIN MANUFACTURING CO.,

New York and Philadelphia, Agents.

WILSON MANUFACTURING COMPANY.,

NEW LONDON, CONN.

MANUFACTURERS OF

SOLID BOX VISES.

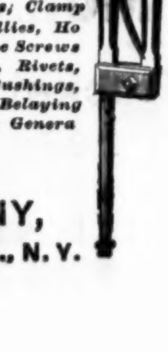
With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes; Clamp Heads and Screws; Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and Genera Hardware.

GALVANIZING DONE TC ORDER.

WILSON MFG. COMPANY,

Warehouse 37 Chambers St., N. Y.



Schweitzer Mfg. Co.,
57 Reade St., N. Y.
IMPORTERS & JOBBERS.

Real Bronze Door Knobs,
BUTTS, &c.
Golden Bronze Knobs
AND
HARDWARE.

Round and Hexagon inside and outside Door Knobs, and combined Escutcheon; beautiful patterns and superior finish, retaining color; Real Bronze. The list includes several SPECIALTIES—the cheapest and best bronze work offered. Bell Pulls, Sash Lifts, Shutter Bars, Sash Fasteners, Escutcheons, Bell Levers, &c.

JAMES E. HALSEY, Sole Agent,

76 READE STREET, NEW YORK.

New York Wholesale Prices, July 2, 1873.

HARDWARE.

Anvils.
Solid Cast Steel...₩ lb 14c
Wright's...₩ lb gold 12½c; over 250 lbs 13c, gold
Armitage's Mouse Hole...gold 12c
Wilkinson's...₩ lb gold 11½c
Eagle Anvil Co. ₩ lb 12c...dis 15 @ 15&5 %

Apple Parers.
Turn Table...
Lightning...
Reading...
Conqueror...
} $8·50 ₩ doz
Union...₩ doz 9 00
Bay State, Paring, Coring and Slicing...$13 50 @ 15 00
Skeleton " "...9 00
Climax Slicer...9 00
Bay State Peach Parer...$11 00 @ 11 50
Lightning " "...11 00 @ 11 50
Peach Stoner and Halver...7 00

Augers and Bits.
Snell Mfg. Co...dis 15 %
Russell Jennings...dis 25 %
Douglass Mfg. Co., Extra...dis 25&5 %
" " No. 1...dis 25 %
" " Hollow Augers...dis 25 %
Cushman's Expanding Hollow Augers...dis 20&10 %
Ives'...dis 25 %
" Hollow Augers...dis 25 %
" Expansive Augers...dis 25 %
" " Bits...dis 25 %
Andrews' Bits...dis 25 %
Cook's Patent Augers...dis 40 %
" " Bits...dis 25&10 %
Shepardson's Double Cut Bits...dis 20 %
Griswold's Patent...dis 20 %
Cast Steel Cut Augers...new list dis 25&10 %
" " Auger Bits...dis 25&10 %
Long Augers...new list dis 25 %
Bonney's Patent Hollow...$48 per doz—dis 25 %
Stearns'...$48 per doz—dis 33 %
Morse's Bit Stock Drills...dis 25 %

Axes.
Blood's...$12 50 @ 14 00
Hunt's...₩ doz $15 00 @ 17 50 net @ dis 5 %
Collins'...₩ doz 12 00 @ 16 00 net @ dis 5 %
Hurd's...₩ doz 12 50 @ 13 50
Schweitzer Mfg. Co.'s...₩ doz 13 00 @ 15 00
Simmons'...₩ doz 13 00 @ 15 00
Morris'...₩ doz 12 50 @ 13 50
Red Jacket...₩ doz 12 00 @ 13 00
Mann's...₩ doz 13 00 @ 14 50
Powell Tool Co., "Peerless"...₩ doz 13 00 @ 14 50

Balances.
Chatillon's...
Frary's...
Morton's...
} new list dis 15 %

Bands.
Plated...add 10; dis %
Iron...dis 15&5 %
Brass (Plated list)...dis 5 %
Oroide...add 15; dis 5 %

Bells.
Hand, Light Brass...dis 60&10 %
White Metal...dis 45&10 %
Globe...dis 20 %
Swiss Hand...dis 20 %
Abbe's...dis 10&10 %
Taylor's Patent Door...net
Western Gong...net
Brook's Crank...net list
" Pull...dis 15 %
Hart Mfg. Co., Crank and Pull...net list
Cow—Common Wrought...new list dis 33⅓ %
" Western...new list dis 33⅓ %
Kentucky "Star"...new list dis 10&10 %
Dodge's Genuine Kentucky...new list dis 10&10 %
Yaw's Genuine...dis 20 %

Bellows.
Blacksmiths'...dis 10 %
Moulders'...dis 10 %

Blind Fasteners.
Van Sand's...₩ gross $14 00
Washburn's Patent...₩ gross 14 00
Merriman's...add 35 @ 40 %

Blind Staples.
Boardman's Patent, ⅜ in. and larger...₩ lb 37½c
" ¼ in. "...42 c

Bolts.
Cast Iron Barrel, Shutter, &c...old list dis 50&10 %
Wrought Iron Barrel...net
" " Square...dis 10 %
Carriage and Tire, Common...dis 65&10 %
" " Norway Iron...dis 55 %
Star, Philadelphia...dis 40 %
Eagle, Philadelphia...dis 40 %
Philadelphia Pattern, P. S. & W...dis 50&5 %
Carriage and Tire, R. B. & W...dis 50&5 %
Plow, R. B. & W...dis 40 %
Stove, R. B. & W...dis 40 %
Union Nut Co...dis 40 %
Machine...dis 20 @ 25 %

Boring Machines.
Kellogg's...dis 10 @ 15 %
Snell Mfg. Co., Rice's Patent...dis 15 %
" " Regular...dis 15 %
Douglas Mfg. Co...dis 20 %
Hovey's Angle...$6 00 @ 6 25
" Upright...4 25 @ 4 50
Morticing Machines, each...$18 00

Braces.
Barber's Patent...dis 30&10 %
Wilson Mfg. Co...net @ add 5 %
Spofford's Patent...dis 25 %
Noble's Patent...dis 33⅓ %
Bartholomew's...dis 15&10 %
" Patent...dis 25 %
Q. S. Backus & Co...dis 30&10 %

Bung Hole Borers.
Common and Ring...dis 20 %
Enterprise Mfg. Co...dis 20 %
Ives' Tap Borers...dis 20 %

Butchers' Cleavers.
Bradley's...dis 15 %
Beatty's...new list dis 10 %

3	3	4	5	6	7	8	9	
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00	

Hart Mfg. Co...dis 45&10 %

1	2	3	4	5	6	
$25·25	$29·75	$30·25	$38·75	$43·55	$48·50	$54·00

Butts.
Wrought Brass...new list dis 20 %
Cast Fast Joint, Narrow...dis 15 %
" " Broad...dis 15 %
Cast Loose Joint...dis 40 %
" " Mayer...dis 40 %
" " Parliament...dis 40 %
Loose Pin Butts...dis 40 %
Wrought Fast Joint, Narrow...dis 10 @ — %
Wrought Broad...dis 25 @ — %
" Loose Joint...dis 25 @ — %
Wrought Table and Back Flaps...net @ — %
Cast Butts, Ohio Butt Co.—
Narrow Fast Drilled and Wire Jointed (old list)...dis 10 %
Broad " "...dis 10 %
Broad Loose Drilled " "...dis 25 %
Silver Tipped...dis 40 %
Loose Joint, Japanned...dis 40 %
" Acorn and Silver Tipped...dis 35 %
Palmer Blind Butts...dis 35 %
Nicholson Blind Butts...dis 35 %
Parker's Blind Butts...dis 25&10 @ 35 %
Clark's Blind Butts...dis 35 %
Seymour's...dis 35 %
Shepard's...dis 35 %
Garretson's...dis 35 %
Standard...dis 30 @ 35 %
Union Mfg. Co.'s Drilled Fast Narrow...new list dis 30 %
" " Broad...dis 25 %
" " Loose...dis 25 %
Whitney & Nait's Bronze Metal...dis 35 %

Caps—Percussion, per 1000.
G. D...40c
Ely's E. B...1-4s, 67½c.; 1-10s, 75c., gold
Double Waterproof, 1-4s, $1 37½; 1-10s, $1 65c., gold
Colt's...1-4s, 82½c.; 1-10s, 90c., gold

Cartridges.
Metallic...dis 45 %

Cards.
Horse and Curry...dis 20&10 %
Cotton...dis 25 %
Wool...dis 25 %

Casters.
Iron and Wood Wheel Plate...new list dis 20&10 %
Brass Wheel Plate...new list dis 20&10 %
Porcelain Wheel Plate...new list dis 20&10 %

Chain.
English Coil...net gold

₩ lb	13¼	10¾	9¾	9c	8¾	8½c	
	3-16	¼	5-16	⅜	7-16	½	

Trace, 6½-10-2...₩ pair, gold, 65c
Trace, 7-10-2...₩ pair, gold, 70c
Galvanized Pump Chain...new list, gold, dis 10 %
German Halter Chain...new list, gold, dis 10 %
German Coil...new list dis 40 %
Jack Chain, Iron...dis 30 @ 40 %
" Brass...dis 30 @ 40 %

Chalk.
White...₩ gross, 60c
Red...₩ gross, 80c
Blue...₩ gross, 80c
Crayons...₩ gross, 14c

Cherry Stoners.
"Family"...₩ doz $9·00

Chisels.
Socket Firmers...dis 60&5 @ 60&10 %
Socket Framing...dis 60&5 @ 60&10 %
Socket Corner...dis 60&5 @ 60&10 %
Tanged Firmers...dis 40 @ 40&10 %
Butcher's...$5·50 to £ gold—new list
Newbould's...$5·50 to £ gold—new list
Spear & Jackson's...$5·50 to £ gold—new list

Clips, Axle.
Norway or Best...dis 20 @ 30 %
Superior...dis 40&5 %
"Star," Superior, Philadelphia...dis 40&5 %

Coal Shovels.
Iron Handled...₩ doz, $ 85 @ 1 25
Wooden Handled...₩ doz, 1 00 @ 2 00

Coal Hods.
Smith, Burns & Co...dis 25 %

No.	14	15	16	17	18	
Japanned	$9·00	9·75	10·50	12·00	13·50	per doz
Galvanized	13·00	14·50	15·50	17·00	19·50	per doz

Cocks.
Brass Racking...dis 10&10 %
Lock and Globe...dis 10&10 %

Coffee Mills.
Common Board and Box...dis 10&5 %
Better Grades...dis 10 %
Increase Wilson's...new list dis 10 %

French Steel...dis 10 @ 20 %
"Champion"...dis 20 %
Swift's...dis 20 %

Compasses and Dividers.
Bemis...dis 15&15 @ 20&5&15 %
Excelsior...dis 30 %
Peck, Stow & Wilcox...dis 20 %

Coopers' Tools.
Bradley's...dis 15 @ 20 %
Chas. E. Little...dis 15 @ 20 %

Corn Knives and Cutters.
Bradley's...list net

Crucibles.
Gautier & Co...₩ No. 5½c

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass...dis 10&5 %
Fitch's...dis 20 %
Ruggles'...dis 15 @ 20 %
Rubber...₩ doz, $9·00—dis 10 %
Schweitzer Mfg. Co...dis 20 %

Curtain Pins.
Silvered Glass...dis 40&10 %

Cutlery.
American Table...
American Pocket...dis 15 %

Door Springs.
Torrey's Patent...$7·50 ₩ doz—dis 20&10 %
J. Palmer...₩ doz $5·50
Challenge.—
Japanned...₩ doz $4 00 @ 6 00
Bronzed...₩ doz 5 00 @ 7 00
Nickel Plated...₩ doz 6 50 @ 9 00
1 Gross lots...dis 10 %
5 Gross lots...dis 20 %

Drawing Knives.
...dis 60 @ 60&10 %
Bradley's...dis 25 %

Drills.
Ingersoll's Ratchet...dis 25 %
Moore's Triple Acting Ratchet...dis 20 %

Egg Beaters.
Monroe's...₩ doz net $8·25 @ 8·50
Ashley's...₩ doz net 2·25 @ 3·00
Earle's Patent...₩ doz net 5·50 @ 6·00
Pratt's Aerating...dis 10 %
Dover...₩ doz net $6·00

Emery.
Genuine Chester—Regular Nos...₩ lb 8c } dis 5 %
" Flour and FF...₩ lb 5c }
Washington Mills—Regular Nos...₩ lb 8c
" Flour...₩ lb 5c

Enameled and Tinned Ware.
Kettles...dis 10 %
Sauce Pans, Glue Pots, &c...dis 5 %

Faucets.
Cork Lined, Wood...dis 55&10 %
Fenn's...dis 50 %
" Cork Stops...dis 40 %
Star...dis 55&10 %
Frary's Patent Petroleum...dis 10&10 %
Taylor's Pattern "...dis 20&10 %
Wood and Metallic...dis 40 %

Files.
American Best...$5 00 to £ net
Nicholson—Mill...5 00 to £ net
" Others...5 00 to £ net
" Tapers (single cut)...5 00 to £ net
Newbould's...5 50 to £ gold
J. & Riley Carr's...5 50 @ 5 75 to £ gold
Stubs'...8 50 to £ gold
Butcher's...5 50 to £ gold
Spear & Jackson's...5 50 to £ gold
Hargreaves, Smith & Co.'s...4 75 to £ gold
Jowitt's...5 25 to £ gold
"Western"...5 00 to £ net
W. K. & C. Peace's "Imperial"...5 25 to £ gold
R. Ibbotson...5 00 to £ gold
Beam & Murray, "Cyclops"...4 85 to £ gold
Fisher's...4 75 to £ gold
Goodlad's...4 00 to £ gold
Moss & Gamble...5 25 @ 5 50 to £ gold

Fluting Machines.
Acme...$7 00 each net
Cole...5 75 each net
Manville, No. 2...7 00 each net
Knox, with 4-inch Rolls...5 00 each net
" " 6 " "...6 00 each net
O. K...6 50 each net
Peerless, 4-inch Rolls...4 00 each net
" 5 " "...5 00 each net
Excelsior, No. 1...4 75 each net
" No. 2...6 50 each net
Diamond...7 50 each net
Climax 7-inch Rolls...8 00 each net
" 4½ "...6 50 each net
Empire...4 00 each net
Eureka, No. 1, 7-inch Roll...8 00 each net
" No. 2, 5-inch Roll...6 00 each net
K. F. M., 4-inch Roll...5 50 each net
" 6-inch Roll...6 00 each net
Carpenter's Self-Heating...13 50 each net
Fairy, Self-Heater...10 00 each net
National, 5-inch Rolls...5 00 each net
Myer's Fashion Fluter, 4½-inch Rolls...3 00 each net
Ponton Fluter, Bright...$1 50—dis 25 %
" Galvanized...2 00—dis 25 %

Fry Pans.
Tinned...dis 20 %

₩ doz	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·00
No.	0	1	2	3	4	5	6	7	8

Peck, Stow & Wilcox...dis 20 %
Smith, Burns & Co., "Excelsior" Polished...dis 20 %

₩ doz	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00
No.	1	2	3		5	6	7	8

Hammers.
Emmet Hammer Co...dis 10 %
Maydole's...new list net
Cheney's...new list net
Verree...dis 5 %
Yerks & Plumb...new advanced list dis 5 @ 10 %
Minot & Co...dis 15 %

Handles.
Hammer and Hatchet...dis 10 %
Quakertown, Axe, Pick and Sledge...dis 10 %
" Hammer and Hatchet...net
Greensboro', Axe, Pick, Hammer, &c...dis 10 %

Harness Snaps.
Judd's...dis 30 %
Fitch's...dis 30 %

Hatchets.
Isaiah Blood...dis 10 %

	Nos.					
Shingling	1 2 3	₩ doz	$7 50	8 00	8 50	
Claw	1 2 3	₩ doz	8 50	9 00	9 50	
Lathing	1 2 3	₩ doz	7 50	8 00	8 50	

Hunt's...net

	Nos.				
Shingling	1 2 3	₩ doz	$7 25	8 00	8 75
Claw	1 2 3	₩ doz	7 75	8 50	9 25
Lathing	1 2 3	₩ doz	7 50	8 25	9 00

Hurd's...dis 20 %

	Nos.				
Shingling	1 2 3	₩ doz	$8 00	8 50	9 00
Claw	1 2 3	₩ doz	9 00	9 50	10 00
Lathing	1 2 3	₩ doz	8 00	8 50	9 00

Newark's Edge Tool Co.'s...dis 25 %

	Nos.				
Shingling	1 2 3	₩ doz	$6 50	7 00	7 50
Claw	1 2 3	₩ doz	7 25	7 75	8 25
Lathing	1 2 3	₩ doz	6 50	7 00	7 50

Yerks & Plumb...dis 10 %

	Nos.				
Shingling	1 2 3	₩ doz	$7 00	7 50	8 00
Claw	1 2 3	₩ doz	7 50	8 00	8 50
Lathing	1 2 3	₩ doz	7 00	7 50	8 00

Simmon's...dis 10 @ 15 %

	Nos.					
Shingling	0 1 2 3	₩ doz	$7 50	8 00	8 50	9 00
Claw	1 2 3	₩ doz	9 00	9 50	10 00	
Lathing	1 2 3	₩ doz	8 00	8 50	9 00	
Broad	1 2 3	₩ doz	9 00	10 00	12 00	
"	4 5 6	₩ doz	14 00	16 00	18 00	
"	7 8	₩ doz	20 00	22 00		

Elephant...dis 15 %

	Nos.				
Shingling	1 2 3	₩ doz	$8 00	8 50	9 00
Claw	1 2 3	₩ doz	9 00	9 50	10 00
Lathing	1 2 3	₩ doz	8 00	8 50	9 00

J. P. Verree & Co...dis 5 %

	Nos.				
Shingling	1 2 3	₩ doz	$7 00	7 50	8 00
Claw	1 2 3	₩ doz	7 50	8 00	8 50
Lathing	1 2 3	₩ doz	7 00	7 50	8 00

Hinges.
Wrought Strap and T...dis 30 %
Providence Plate...{6 and 8 in. list 11c. / over 8 in. list 9½c.}...dis 10&5 %
Screw Hook and Strap...{8, 10, 12 in. 8¾c / 14 to 36 in. 7½c}...net

Hoes.
Solid Shank, C. S...₩ doz $8 00—dis 20 @ 25 %
Socket...₩ doz 9 00—dis 20 @ 25 %
Riveted Eye...₩ doz 5 00—dis 20 @ 25 %
Grub...dis 20 %
Planters'—Winsted...add 10 %
Scovill...add 33⅓ %
Scovill Pattern (Winsted)...add 20 %

Hooks.
Belt...dis 50 %
Bench...₩ doz net $5 00 @ 8 50
Wardrobe, Japanned...new list dis 10&10 %
Hat and Coat "...new list dis 15&10 %
Wrought Staples and Hooks and Staples...dis 60 %
Wrought Hasps and Staples and Hasps, Hooks and Wrought Staples...dis 60 %
Screw Hooks and Eyes, revised list...dis 60&10 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs. 5 % discount.
Brundage.

No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8	9	10
	22c	20c	20c	20c	20c	20c

Perkins Finished (ready to drive).

No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c

Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished), Extra Finish.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	23c

In lots of 1000 lbs., dis 5 %.
Vulcan.

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.

New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
U. B.	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis 5 %.
Star Brand...₩ lb 16c
Morgan...16c

Horse Shoes.
Burden...₩ keg, $6 37½
Shoenberger...₩ keg, 6 37½
R. I. Horse Shoe Co., Perkins Pattern...₩ keg, 6 37½
" " R. I. Pattern...₩ keg, 6 87½
Mule Shoes...₩ keg, 7 37½

Kettles.
Enameled...dis 10 %
Brass...₩ lb 55c
In lots of 500 lbs...₩ lb net 50c

Knives.
Butcher and Shoe, "Ames'"...dis 15 %
Butcher and Shoe, "Wood's"...dis 5 % cash
Hay and Straw, "Wadsworth's"...dis 15 %

Knobs.
Base—Common...net
" Plush Tip...dis 10 %
" Elastic End...reduced list dis 10&10 %
Trenton Lock Co...dis 40 %

Lanterns.
Brady's Patent...dis 10 %
Ætna...dis 10 %
Yankee...dis 10 %
De Beque...dis 10 %

Locks and Latches.
Cabinet—Eagle...dis 25 %
Cabinet—Gaylord...dis 25 %
Trunk...dis 10 %
Continental...dis 15 %
Shepardson's...dis 20 %
Trenton Lock Co...dis 40 %

Meat Cutters.
Dixon's (P. S. & W.)...dis 5 %

No.	1	2	3	4
₩ doz	$14 00	$17 00	$19 00	$30 00

Hales'...dis 25 %

No.	11	12	13
₩ doz	$27 00	$33 00	$42 00

Perry's Champion (P. S. & W.)...dis 5 %

No.	200	300	400
₩ doz	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.)...dis 5 %

No.	100	150
₩ doz	$15 00	$18 00

American...dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.
Stebbins' Pattern...dis 60&10 @ 70 %
Tinned ends...dis 40&10 %
Weed's Patent Self-Boring...dis 15 %
" without Auger Bit...dis 40 @ 50 %
Patent Self-Measuring...per doz $42 00—dis 20 %

Mouse Traps.
Wood Choker...₩ doz holes, 16 @ 18c

Nails.
10d Cut (Standard)...$4 75

Nuts and Washers.
Nuts, large...3½c off list
" small...4½c off list
Washers (as to quality)...3c @ 6c off list

Oil Stones.
Washita No. 1...₩ lb 22c
" Slips...₩ lb 44c
Hindostan...₩ lb 6c dis 10 %
" Slips...₩ lb 10c dis 10 %

Oilers.
Olmsted's...dis 25&10 %
Broughton's...dis 25&5 %
Common Zinc, Brass and Copper...dis 20 %

Picks.

Washoe R. R. Nos.	1	2	3	4	5	
₩ doz	$14·00	15·00	16·00	17·00	18·00	
Washoe Coal, "	$8·50	9·00	10·00	11·00	13·00	15·00

Picture Nails and Knobs.
Richards' Patent...dis 40 @ 40&10 %

Planes.
Auburn Bench and Fancy...dis 15 %
Bailey's Patent Adjustable...dis 15&10 %
Howland's Bench and Fancy...dis 15 %
Chapin's " "...dis 15 %
" 2d quality...dis 15 %
Sandusky Tool Co...dis 15&5 %
"Ogontz"...dis 15 %
Plane Irons...dis 15&5 %
" ...list net
" Butcher's...$5 50 to £ gold—new list
" Spear & Jackson's...5 50 to £ gold—new list
" Sandusky Tool Co...list net

Pumps.
Douglas Cistern, etc...new list dis 25 %
" S. & F...new list dis 30 %

Rakes.
Cast Steel...dis 25 %

$8 00	9 00	10 00	11 00	
8	10	12	14	teeth.

Razor Straps.
Genuine Emerson (B. F. Badger)...dis 33⅓ %
Hunt's...dis 25&10 %
Chapman...dis 10 @ 15 %

Rivets.
Iron and Tinned...dis 25 %
Copper Rivets and Burrs...dis 10 %

Rods.
Stair...new list dis 25 %
American Patent...dis 25 %

Rope.
Manufacturers' List.
Manila...½ inch and larger ₩ lb 18c
" ...⅜ inch ₩ lb 18½c
" ...¼ and 5-16 inch ₩ lb 19c
" Lath Yarn...₩ lb 19c
" Hay Rope...₩ lb 19c
Jute...₩ lb 19½c
Sisal...₩ lb 12c
" ...½ inch and larger ₩ lb 15½c
" ...⅜ inch ₩ lb 16c
" ...¼ and 5-16 inch ₩ lb 16½c
" Hay Rope...₩ lb 16c

Rules.
Boxwood and Ivory...dis 60&10 %

Sad Irons.
...₩ lb 5½ @ 6c

Sand Paper—dis 7½ @ 10 %
Bender & Adamson's (Flint) 00 to 1½...$4 50 ₩ ream
" " 2, 2½ & 3...5 00 "
Assorted...4 50 "
Star...
Emery...₩ ream $8 50
Cowdin Mfg. Co...₩ ream $7 00 @ 12 00
Diamond Flint, 00 to 1½...dis 7½ @ 10 %
" " 2, 2½, 3 and assorted...per ream $4 50 / 5 00
" Emery Paper...per ream $7 00 to 12 00

Sash Locks.
Clark's...dis 25 @ 30 %
Ferguson's...dis 20 @ 25 %
Champion...₩ gross $13 00 @ $15 00
Norwich...dis 15 %

Sash Weights.
Solid Eyes...₩ lb 3c

Sausage Fillers.
Perry's (P. S. & W.)...dis 5 %

No.	1	0
₩ doz	$15 00	$21 00

Saw Rods.
...list net

Saws.
Spear & Jackson's...$4 50 to £ gold
John Spear...$3 60 to £ gold
Am. Saw Co...new list
Perforated Cross Cuts, all kinds...68c ₩ foot
Inserted Tooth...
All else...dis 10 %
Disston's Cross Cut, Circular and Mill...dis 12½ %
Hand, Panel, Back, &c...dis 12½ %
Butcher Bow Saws, Butcher Saw Blades, Hack Saw Blades...dis 7½ %
H. W. Peace's Circulars...dis 12½ %
" Other kinds...dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular...dis 10 %
Lightning...new list dis 10 %

Scales.
Brown's...new list dis 20&12½ %
Fairbanks'...dis 25&5 %
Howe's...new list dis 15 @ 20 %
Shattuck's Counter and Union...dis 15&5 %
National Platform...dis 15 %
Eureka...dis 25 %
Scale Beams...dis 20 %
No. 1 800 to 1200 lbs...90c ₩ cwt
No. 2 " "...75c ₩ cwt

Screws.
American list of April 1, 1873.
Flat Head Iron...dis 47½ %
Round Head Iron...dis 45 %
Flat Head Brass...dis 60 %
Round Head Brass...dis 50 %
Round Head Silver Capped...new list dis 20 %
Patent Gimlet Point Coach and Hand Rail...dis 10 %
Bed...list net

Scythes.
Blood's German Steel, Grass...₩ doz $9 00
" Cast " "...₩ doz 10 00
" Silver " "...₩ doz 11 00
" German " Grain...₩ doz 13 00
" Cast " "...₩ doz 14 00
" Red Rover...
" Young America...12 00
" Silver Clipper...9 50
Scythe Snaths...12 63

Shears.
...dis 20 %
Cast Steel...dis 60&10 %
Conn. Cutlery Co., new brand...dis 60 %
Rowe's...dis 50&10 %

Shovels and Spades.
Ames...list July 1, '70, list net @ dis 2½ %
Rowland...new list Feb. 8, '73, dis 20 %
Old Colony...dis 2½ %

Shovels and Tongs.
Iron Head...list net
Brass Head...dis 5 %
Polished Steel...new list dis 15 %

Slates.
Square Frames, Round Cornered, by case...dis 60&10 %
Less than a case...dis 50 @ 55 %
Oval Frames, by case...dis 40 @ 40&10 %
Less than a case...dis 30 %

Spoons.
Iron...new advanced list, dis 10 %
By the case...dis 20 %
Britannia...dis 40 %
Plated A 1...dis 25&10 %
German Silver...net @ dis 10 %
Tinned (P. S. & W.)—
Teas...$1 50 ₩ gross, net
Tables...2 75 net

Stocks and Dies.
...dis 15 %

Stove Polish.
Joseph Dixon's...₩ gross, $6 00 @ 6 25
Gold Medal...₩ gross $5 50

Squares.
Steel...dis 50 %; full cases, dis 50&10 %
Iron...dis 50 %; full cases, dis 50&10 %
Nickel Plated...add $2 50 @ $4 00 ₩ doz net
Try Squares and T Bevels...dis 45&10 %
Star Try Squares and Bevels...dis 20 %

Tacks.
Full Weight American Iron...dis 35&7½ %
Half Weight American Iron...dis 67½&7½ %
Carpet...dis 7½ %
Brads American Half Weight...dis 50&7½ %

	½	⅝	¾	1	1¼ in. and over	
Finishing Nails, ₩ lb	25c	20c	18c	14c	13c	dis 7½ %
Trunk and Clout, ₩ lb	25c	20c	18c	14c	13c	dis 7½ %

Copper Tacks...₩ lb 56c—dis 7½ %
Iron Shoe Nails, ₩ lb 4-8 and longer, 10½c; 3½-8, 11c...dis 7½ %
Double Pointed...new list dis 33⅓ %

Tapes, Measuring.
American Flask and Cap Co...dis 10&10 %
Eddy's...dis 10&10 %

Toe Calks.
...₩ lb 12c

Tobacco Cutters.
Champion...dis 20 %
Peck, Stow & Wilcox...dis 10 %

Traps.
Newhouse...dis 17½ %
Hotchkiss...dis 20 %
Peck, Stow & Wilcox...dis 30 %
Blake's Patent...dis 15 @ 20 %

Vises.
Trenton Vises, Solid Box.
30 to 110 lbs...17c
111 to 160 lbs...18c
160 and over...21½c
Peter Wright's...₩ lb 15½c. gold
Wilson's Solid Box...dis 10 @ 15 %
30 to 160 lbs...18c
160 and upward...21c
Backus & Union, Parallel...dis 25 %
Buffalo, Parallel...new list dis 15 %
Fisher & Norris' Double Screw Parallel...dis 15 @ 15&5 %

Wire.
Bright and Annealed...Nos. 0 @ 18 dis 25 @ 30 %
" " ..." 19 @ 26 dis 35 @ 40 %
" " ..." 27 @ 36 dis 40 @ 45 %
Coppered...Nos. 0 @ 18 dis 20 @ 22½ %
Galvanized...dis 35 @ 40 %
Tinned...dis 15 @ 20 %
Cast Steel...5 @ 10 %
Tinned Broom Wire...dis 20 @ 25 %
Galvanized Telegraph, Nos. 8 and 9...₩ lb 10c @ 11c
" " " 10 and 11...₩ lb 11c @ 12c
" " " 12...₩ lb 11½c @ 12½c
Annealed Fence, Nos. 8 and 9...dis 25 @ 30 %
" Grape, " 10 to 14...dis 25 @ 30 %
Fence Staples...₩ lb 10c
Stubs' Steel Wire...$7 00 to lb gold

Wrenches.
Baxter's Adjustable "S"...dis 20 %
" Diagonal...dis 20 %
Collin's & Co.'s...new dis list 30 %
Coes' Genuine...dis 30&10 %
" Pattern (Wrought)...dis 45 %
" " (Malleable)...dis 50 %
Lindsay's Patent...dis 25 %
Taft's Pattern...dis 60&10 %
Davis' Patent Duplex...dis 40 %

METALS.

IRON.—DUTY: Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1¼ cents per lb.

Pig Iron—AMERICAN.
Foundry No. 1...₩ ton, $46 00 @ 50 00
Foundry No. 2..." 43 00 @ 45 00
Gray Forge..." 36 00 @ 38 00
White and Mottled..."
SCOTCH.
Gartsherrie...nominally " 50 00
Coltness..." 52 50
Glengarnock..." 44 00 @ 45 00
Eglinton..." 43 00 @ 44 00

Bar Iron.
Am. Refined, at mill...₩ lb 3·9 @ 4c

Rails.
Welsh, gold...₩ ton, 67 00 @ 68 00
American, at works, currency..." 77 00 @ 80 00
Old Rails, D. H., currency..." 47 00 @ 50 00

Scrap.
Wrought Scrap, from yard, nominally " 46 00 @ 48 00

Bar Iron from Store.
Common Iron.
¼ to 2 in. round and square...₩ ton, $ 87 50
¾x9-16 in " "...92 50
⅜ in. " "...95 00
2¼ to 3 in. "...92 50
1 to 6 in. wide x ⅜ and 1 in. thick...87 50
1¼ to 6 in wide x ¼ & 5-16 in. thick...92 50
1 and 1⅛ in. x ¼ and 5-16...95 00
Swedish Iron.
1½x¾ and ½...185 00
1½x⅝ to ⅜, and ¾ square...180 00
1¾ to 5x⅝ to ¾ and ¾ to 2-in. square...175 00
6 to 12x⅜ and ½...
Refined Iron.
¼ to 2 in. round and square...90 00
1 to 6 in. wide x ⅜ to 1 thick...90 00
1¼ to 6 in. wide x ¼ and 5-16 thick...95 00
1 and 1⅛ x ¼ and 5-16...97 50
Large Rounds.
2⅛ to 2¾, round and square...100 00
3, 3¼ and 3½ in...105 00
3¾ and 4 in...115 00
Rods—⅝ and 11-16, round and square...95 00
½ and 9-16...100 00
7-16...102 00
⅜...107 00
5-16...112 00
¼...117 00
3-16...127 00
Band Iron.
1 to 6 in. x 3-16 to No. 12...110 00
Horse Shoe Iron.
⅝ and ¾ x ⅜, to ½... } 120 00
1 x ⅜, to ⅝... }
Ovals, Half Ovals and Half Rounds.
⅝ to 1½...₩ ton, $115 00
½ and 11-16...120 00
⅜ and 9-16...125 00
7-16...
⅜...
Nail Rods
Best Norway...₩ lb 9½c
Norway Shapes
¾ to 2 in. x ⅜ to ⅝... } 8½c
½ to ¾ square... }
Norway Bar
¾ to 2 in. square...
Spring Steel
1 to 4 in. wide...6½c
Tire Steel
¾ to 1½ x ¼ and 5-16...9c
⅝ & 1 x 3-16... } 10c
⅜ & 1 x ⅛... }
Toe Calk Steel
½ to ⅝ x ⅜ to ½...8½c
Plow Steel
6 to 16 wide...9½c
Sleigh Shoe Steel
¾ to 1½ x ⅜ to ⅝...
Hoops, ⅝ x No. 22...₩ ton, $165 00
" ¾ x No. 20...135 00
" ⅞ x No. 19...130 00
" 1 and 1⅛ x No. 18...122 50
" 1¼ to 2 and 1x1⅛ x No. 13 and 14...117 50
Scroll Iron—½ x 12...140 00
½ x 10...135 00
½ x 3-16...130 00
½ x ¼...125 00
⅝ x 14...140 00
⅝ x 12...125 00
⅝ x 10...122 50
⅝ x 3-16...120 00
⅝ x ¼...117 50
¾ x 11...125 00
¾ x 10...120 00
¾ x 10...117 50
¾ x 3-16...115 00
¾ x ¼...112 50
⅞ x 14...
⅞ x 12...110 00
⅞ x 10...112 50
⅞ x 3-16...110 00
⅞ x ¼...107 50

Sheet Iron.

		Common English.	R. G. American.
Nos. 10 to 20	₩ lb	6c	7½c
21 to 24	"	6½c	7½c
25 to 26	"	7c	7¾c
27	"	7c	8c
28	"	7½c	8½c
29	"	8c	

Galvanized, 10 to 20...₩ lb 11½c
" 21 to 24...12½c
" 25 to 26...13½c
" 27...14½c
Patent Polished...15c
Russia, Nos. 8 to 11...₩ lb 22c
" Nos. 12 to 16...21c
Belgian...12½
One piece Corrugated Sheet Iron Elbows.
CHARCOAL IRON.

4¾	5	5½	6	7	inch.
$3·75	4·25	5·25	5·25	6·50	per doz.

RUSSIA IRON.

4½	5	5½	6	7	inch.
$7·00	13·00	13·00	13·00		doz.

Brass.
ROLLED AND IN SHEETS.
(Brown & Sharp's Gauge.*)
For the purchase of 100 pounds and over at one time:
HIGH BRASS.
All Nos. to No. 28, and widths 14 in. and under...40c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in. inclusive...42c
Over 20 in. to 30 in. inclusive...48c
½c ₩ lb advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass at...59c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths...46c
Printers' Rules...48c
Sheets wider than 30 in. and under 40 in...50c
" 40 in. and over...52c
Circular sheets, in diam. from 4 in. to 14 inclusive...52c
" over 14 in. to 20 "...56c
" 20 in. to 30 "...58c
" 30 in. to 40 "...59c
" 40 in...60c
LOW BRASS.
4c ₩ lb more than High Brass.
Gilding Metals, 7c ₩ lb more than High Brass.
Platers' or Gold Metal } In Bars...52c / Sawed...55c
FOR SLITTING: Metal in Width.
2 in. to ¼ in., to No. 30, inclusive, 1c ₩ lb advance.
2 in. to 1 in., thinner than No. 30, 2c ₩ lb advance.
2 in. to ½ in., " " 30, 3c " "
⅜ in. and less to No. 30, 2c ₩ lb advance.
⅜ in. and less thinner than No. 30, 5c ₩ lb advance.
10 % discount.
SCRAP—NEW METAL.
High Brass Scrap, 19 cents, net.
Low " 21 "
Gilding, 23 cents, net.
Turnings, Filings and Chips, half the price of Scrap net.

BRASS AND COPPER WIRE.
(Stub's Wire Gauge.)

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20	43	47	51
Nos. 21, 22, 23	44	48	54
Nos. 24 and 25	45	49	55

Brass Wire straightened and cut, 4 cents advance. 10 % discount.

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gild'g and Cop'r.
No. 26	0·45	0·49	0·55
No. 27	0·48	0·52	0·58
No. 28	0·50	0·54	0·60
No. 29	0·52	0·56	0·62
No. 30	0·54	0·58	0·66
No. 31	0·56	0·60	0·70
No. 32	0·60	0·64	0·75
No. 33	0·64	0·68	0·85
No. 34	0·68	0·72	0·95
No. 35	0·73	0·77	1·07
No. 36	0·82	0·86	1·19
No. 37	1·02	1·02	1·29
No. 38	1·32	1·32	1·49

Ten cents per pound extra for Spooling.

TUBING.
(Brown & Sharpe's Gauge.)
Plain to No. 20, inclusive...₩ lb $0 53
Nos. 21, 22, 23, 2c. advance on List for each No.
Nos. 24, 25, 26, 4c. "
Above No. 26 special rates.
Plain Tube, 1-4 inch...74
" 3-16 "...1 59
" 1-8 "...1 84
All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 20.
Tubing sawed or cut 2 to 4 ft. long, 3c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet. 10 % discount.
BRASS DOOR RAIL, Polished—54 cents per lb.—10 %

BELT AND HOSE COPPER RIVETS AND BURS.

Price per lb	57	58	60	62	64	66	68	72	76c
Nos.	7	8	9	10	11	12	13	14	15

Braziers Rivets, 51 cents per pound discount 10 %.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent. 12 inch. to No. 26	0·75	0·90
6 " "	0·85	1·00
10 " "	1·00	1·20
15 " "	1·20	1·35
18 " "	1·20	1·50
20 " "	1·30	

Discount 10 %.
German Silver Sheets over 12 inches wide and weighing more than 10 lbs...$2 00 ₩ lb net
Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.
German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap.
* Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Gauge.

COPPER—DUTY: Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ lb; Manufactured (including all articles of which copper is a component of chief value), 45 % ad valorem. All subject to a reduction of 10 per cent.
American Ingot...
English...₩ lb
SHEATHING, BRAZIERS' COPPER, BOLTS, &c.
Braziers Copper, ordinary sizes, over 16 oz., per square foot...40c ₩ lb
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot...42c
Braziers Copper, 12 oz. per square foot and lighter...43c.
Circles less than 84 inch in diameter...46c.
Circles, 84 inch diameter and over...45c.
Segment and Pattern Sheets...45c.
Locomotive Fire Box Sheets...40c.
Sheathing Copper, over 12 oz. per sq. ft...38c.
" " 12 oz. ₩ sq. ft. and lighter...40c.
Bolt Copper...40c.
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.
TINNING.
14x48, by the case...8c. ₩ sheet.
14x48, less than case...10c. "
Boiler Sizes, 7 and 8 inch...12c. "
" 9 inch...12c. "
Other sizes not larger than 30x60...2½c. ₩ sq.
Larger than 30x60...3c. "
Copper Bottoms, 46c. ₩ lb.
O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier...44c. By the case, 43c. ₩ lb
12 oz. and lighter...47c. " 46c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier...46c. By the case, 45c. ₩ lb
(And all sizes not over 30 inches wide.)
30x60
14 and 16 oz. and heavier...53c. ₩ lb
12 oz. and lighter...55c. "

LEAD—DUTY: Pig, $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.
Spanish...@ 6¾c gold
German Refined...@ 6¾c gold
English...@ 7¼c gold
Bar...dis 10 %...8½c
Pipe...dis 10 %...9½c
Tin Lined Pipe...dis 10 %...25c
Sheet...dis 10 %...9½c
Shot...dis 10 %. Drop, 11½c.; Buck, 12½c.

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.
Tool...17c
Spring...13½c
Homogeneous...18c
Tire...12½c
Machinery (round and square)...12½ @ 15c
File...11½ @ 15c
Sheet...14 @ 20c
Saw Plate, mill and mulay...14 @ 14½c
Saw Plate, gang and X cut...16 @ 20c
" circular as to size...18 @ 30c

Chrome Steel.
Tool...₩ lb 20 @ 21c
Tool, extra fine...30c
Spring...₩ lb 12c and upward
Machinery...15c
Hammer...16c
Gun or Homogeneous...18c
English Steel,—payable in gold, dis 5 % cash.
Best Cast...₩ lb 19½c
" Extra Cast...21½c
" Round Machinery, Cast...16½c
" Swaged, Cast...19½c
" Best Double Shear...19½c
" Blister, 1st quality...15½c
" " 2d quality...13½c
" " 3d quality...12c
German Steel, Best...12½c
do Eagle...11½c
do 2d quality...10½c
Sheet Cast Steel, 1st quality...19½c
" 2d quality...17½c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.
Silesian, cash...8¾ @ 8½c., gold
American...@ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per lb. Manufactures of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Banca or Block, and Pigs, free.
Banca...₩ lb 38 c., gold
Straits...₩ lb 32c., gold
English...₩ lb 32c., gold

CHARCOAL TIN PLATE.
I C 10x14, Prime Charcoal...13 50 @ 14 00
12x12, "...14 00
14x20, "...14 75
I X 10x14, "...16 25
12x12, "...16 75
14x20, "...17 50
For each additional X add...2 25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary
I C 10x14	$12 50	$12 00	$12 00
I C 12x12	14 00	13 50	
I C 14x20	14 00	13 00	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$12 50	12 00 @ 12	9 75 @ 11 00
I X 14x20	14 50		

ZINC—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet, 2½c ₩ lb. All subject to a reduction of 10 per cent.
Sheet...cask 10¾c
" ...open 11

Paper Stock, Old Metals, &c.

(Dealers' Selling Prices.)

Canvas linen	5¾ @ 6
" cotton, No. 1	7 @ 7¼
" " No. 2	4
White linen rags, No. 1	7 @ 7¼
" " No. 2	5 @ 5¼
Colored	3 @ 3¼
Mixed woolens	2 @ 4
Soft woolens	6½ @ 7
Gunny bagging	1¾ @ 2
Jute Butts	1¾ @ 1¾
Kentucky bagging	3¾ @ 3¾
Book stock	4¾ @ 4¾
Waste paper and scraps	2¼ @ 3
Rope cuttings	3¼ @ 3
Kentucky Bale rope	4 @ 4¼
Oakum junk, No. 1	5¼ @ 5¼
" No. 2	4½ @ 4¾
Grass rope	4¼ @ 4¾
Tarred Shaking	1¾ @ 2

Old Metal.

Copper	27 @ 28
Yellow metal	18 @ 22
Brass	18 @ 21
Old lead, solid	6½ @ 6½
Tea lead	5½
Wrought iron	1½ @ 1¾
Sheet iron	1 @
Cast iron	1 @ 1¼
Machinery iron	1¼ @ 1½
Zinc	5½
Pewter, No. 1	26 @ 27
" No. 2	10 @ 12
Spelter	7

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ lb 30c
" Ordinary	6c
" Ivory Drop, fair	15c
" " best	25c
Black Paint, in oil	kegs, 8c.; ass't'd cans, 11 c
Blue, Prussian, fair to best	50 @ 75c
" " in oil	35 @ 65c
" Chinese, dry	80c
" Ultramarine	25 @ 30c
Brown, Spanish	1¾c
" Van Dyke	9c
Carmine, 40	$12 @
Green, Chrome	15 @ 28c
" " in oil	18 @ 25c
" Paris	good, 30c; best, 40c
" " in oil	" 30c; " 45c
Mineral Paints	1¼ @ 4c
Orange Mineral	14½c
Red Lead, American	9¾c
" " English	10¾c
" Venetian (N. C.) dry	2¼c
" " in oil	ass't'd cans, 11c; kegs, 8¾c
" Indian, dry	10c
Rose Pink	13c
Sienna, American, Raw	4c
" Burnt	4c
" " in oil	16 @ 25c
" Raw "	15 @ 25c
Umber, Burnt	4 @ 5c
" " in oil	16 @ 21c
" Raw	3¾ @ 7¾c
" " in oil	16 @ 25c
Vermillion, Chinese	$1 4
" English	1 25
" Trieste	1 15
" American, Common	25c
White Lead, American, pure dry	11½c
" " " in oil	12 c
White, Paris, English, prime	in bbls. 2¾ @ 3¼c
Yellow Ochre, French	2¼ @ 2½c
" " in oil	ass't'd cans, 11c; kegs, 8½c
" Vermont	in casks 1½c
" Chrome	17 @ 25c
" " in oil	18 @ 25c
Zinc White, American No. 1 dry	9c
" " in oil	12c
" French (Paris)	11½c
" " in oil	13¾c

Oils.

Linseed Raw	₩ gal. casks, 97c; bbls. 98c
" Boiled	$1 02 @ 1 00
Whale, Crude	"
" Bleached Winter	"
Sperm, Crude	"
" Winter unbleached	"
" Bleached	1 80
Seal, Extra Refined	67½c
Lard, Pure Winter	1 00
" Spring	75c
Cotton Seed, Crude	55c
" Southern Yellow	65c
" White	75c
Neatsfoot, Winter	$1 10 @ 1 25
Natural Lubricating	bbls. 45c

Sundries.

Asphaltum	9
Benzine	₩ gal. 17c
Chalk	1c
" Block	1c
Dryer, Patent, Am'n	ass't cans, 10½c.; kegs, 9c
" " English	11c.; " 9c
Flocks	50c
Frostings	16c
Glue, White	35 @ 45c
" Sheet	25c
Glaziers' Points, Zinc	9c
Gum, Copal	25c
" Damar	35c
" Shellac, English	35c
" " dark	46c
Litharge	10c
Pumice Stone, selected Lumps	4 @ 6c
" powdered	4c
Putty in bladders	6c
" in bulk	4c
Rotten Stone, soft, English	8c
Spirits Turpentine	45c
Whiting, Spanish	1¼c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$10·25	$9·25	$9·00	$8·25
11 x 14 & 12 x 13	11·50	10·50	9·75	8·75
10 x 16 to 14 x 20	12·50	11·50	10·25	9·00
18 x 22	13·50	12·00	10·75	9·50
15 x 26 to 20 x 30	15·75	14·00	12·50	10·25
22 x 30 to 24 x 30	19·75	16·75	13·50	
26 x 28 to 24 x 36	20·25	17·50	14·00	
26 x 36 to 26 x 44	22·75	20·25	15·50	
28 x 44 to 30 x 50	24·00	21·50	16·75	
30 x 52 to 30 x 54	27·25	24·00	18·75	
30 x 56 to 34 x 56	28·50	26·50	21·25	
34 x 58 to 34 x 60	31·50	29·50	25·00	
36 x 60 to 40 x 60	37·00	32·50	29·50	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16·00	$14·00	$13·50	$12·50
11 x 14 & 12 x 13	17·25	15·50	14·75	13·25
10 x 16 to 14 x 26	18·75	17·25	15·50	13·50
18 x 22	20·00	18·00	16·25	14·25
15 x 26 to 20 x 30	24·00	21·00	18·00	15·50
22 x 30 to 24 x 30	30·00	25·25	20·25	
26 x 28 to 24 x 36	31·00	26·50	21·00	
26 x 36 to 26 x 44	34·00	30·50	23·25	
28 x 44 to 30 x 50	36·00	32·25	25·25	
30 x 52 to 30 x 54	41·00	36·00	28·25	
30 x 56 to 34 x 56	45·00	39·50	33·00	
34 x 58 to 34 x 60	48·00	45·00	37·50	
36 x 60 to 40 x 60	55·00	49·00	45·00	

Sizes above—$12 ₩ box extra for every five inches.
Discount to the trade 60 per cent.

The Improved Excelsior Lawn Mowers,

FOR HAND OR HORSE POWER, MANUFACTURED BY

CHADBORN & COLDWELL MANUFACTURING CO.

P. O. Box 479, NEWBURGH, N. Y.

	Price.	Width of Cut.	Grass Box.	Horse Boots.
No. 2½	$ 75	25 inch.	....	$12 per set.
No. 3	125	30 "	$10	12 "
No. 4	160	35 "	11	12 "
No. 5	200	40 "	12	12 "

Ask for the Excelsior and get the Best.

For Sale by all the leading Hardware, Agricultural, Implement and Seed Stores, in this and foreign countries.

No. 0 Hand Mower—Cuts 11 inches........Price, $16.
No. 1 " — " 14 " .... " $25.
No. 2 " — " 18 " .... " $30.

The No. 1 for general use, and warranted. The No. 2 for large lawns—when smooth.

The Excelsior is simple and durable. The *gearing* securely incased and will not clog. Has a *full roller*, without which no machine is perfect. A *ball ratchet*—"noiseless"—needs no oiling. Adjustable *wrought iron handle*. *Hangers* secured by bolts. The front rollers to these are adjustable, to vary the hight of cut. *Open balance wiper*—with *steel knives*—the only practicable means of securing strength and ease of draught. *Patent iron handle*, with attachment on each side of the machine—avoids the serious annoyance of a single wooden handle. The **Excelsior Lawn Mower** having been before the public for four years, and subjected to the most severe tests, the manufacturers feel warranted in asserting that for SUPERIORITY in *simplicity of construction* and *durability* it has no equal. It is *important* in either *Horse* or *Hand Lawn Mowers*, that their design should combine the *greatest strength* with least amount of *metal*: we therefore use only the very *best material*, together with *good workmanship*, enabling us to produce *Lawn Mowers* light *in weight*, of *easy draught*, and at a price within the reach of all.

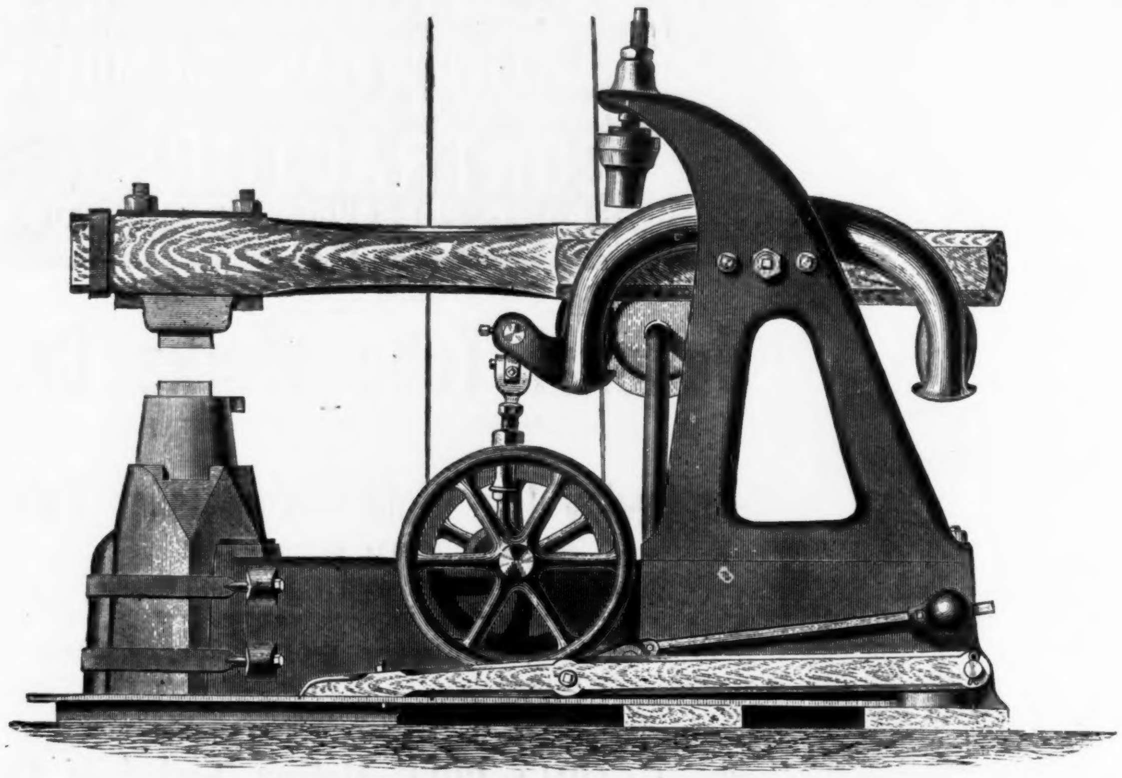
The Excelsior has received the most favorable commendation from all, and the advantages claimed for it over other machines are fully appreciated wherever it is known. To this we add numerous testimonials, but the fact that our sales have greatly increased year by year, is the most convincing proof of its adaptation to the wants of the public.

GRAND SILVER MEDALS AWARDED THE EXCELSIORS AT THE

New England Fair, held at Lowell, Mass., Sept., 1871 and 1872; New Jersey State Fair, held at Waverly, N. J., Sept., 1871 and 1872; the first premium at the New York State Fair, 1871; Western New York Fair, 1871; Ohio State Fair, 1871 and 1872; Northern Ohio Fair, 1871 and 1872; Michigan State Fair, 1871 and 1872; Indiana State Fair, 1871; Wisconsin State Fair, 1871 and 1872; Tennessee State Fair, 1871; Virginia State Fair, 1871; South Carolina State Fair, 1871.

For description of Mowers, and particulars, send for catalogue. Agents wanted. A liberal discount to the trade.

BRADLEY'S CUSHIONED HAMMER.



This Hammer is a great improvement over the old style of helve hammers. It is all made of Iron and Steel except the helve and cushions. It is portable, takes up but little room, and makes no noise except the stroke of the hammer. It takes less power to drive it, and it turns out more and better work. The helve is nicely balanced upon two adjustable hardened steel centers, and there is no bind or friction connected with its action. It will endure more hardships at less expense for repairs, and, consequently, outlasts any other. Its capacity is greatly increased, but not at the expense of its size, convenience or durability. It strikes a more accurate, forcible and elastic blow than any other hammer. It is being used and is peculiarly adapted for the exceeding difficult work of swedging cotton spindles; no other hammer has been able to do this work as perfectly and economically. It is the favorite of every hammersman; it promptly obeys his every touch, and he soon regards it as a thing of life. *We warrant them as recommended*, and refer you to the following parties now using them:

W. H. Haskell & Co., Pawtucket, R. I.
Cole Brothers, Pawtucket, R. I.
American File Co., Pawtucket, R. I.
Fales, Jenks & Son, Pawtucket, R. I.
Providence Tool Co., Providence, R. I.
Nicholson File Co., Providence, R. I.
Woonsocket Iron Foundry, Woonsocket, R. I.
John Berkenhead, Mansfield, Mass.
Steele & Condict, Jersey City, N.
Silsby Mfg. Co., Seneca Falls, N. Y
Cowing & Co., Seneca Falls, N. Y.
Rumsey & Co., Seneca Falls, N. Y.
Clapp, Fitch & Co., Auburn, N. Y.
Sweet, Barnes & Co., Syracuse, N. Y.
Warder, Mitchell & Co., Springfield, O.
Robert Doyle, Watseca, Ill.
Furst & Bradley Mfg. Co., Chicago, Ill.
Chicago Plow Co., Chicago, Ill.
Mark H. Richards, Pottstown, Pa.
Peters Bros. Mfg. Co., Marshall, Mich.
Studebaker Bros. Mfg. Co., South Bend, Ind

For particulars address

BRADLEY MFG. CO., Syracuse, N. Y.

SELDEN PATENT

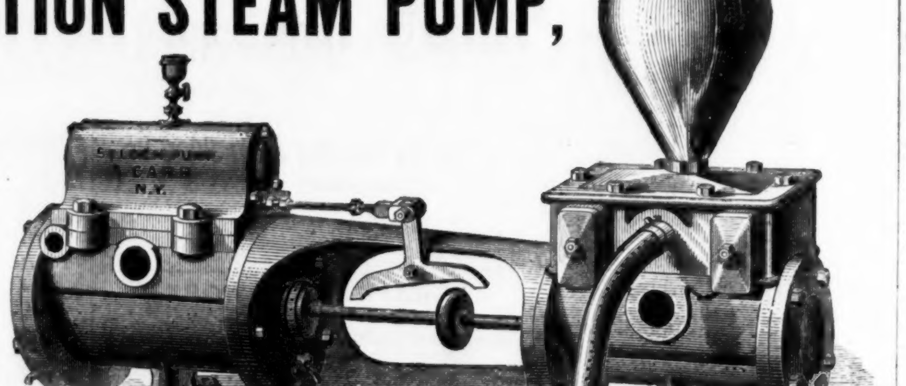
DIRECT ACTION STEAM PUMP,

Patented August 2nd and December 20th, 1870.

Tank Pump, with Boiler Feed Attachment.

For Boiler Feeders,
For Water Works,
For Fire Pumps,
For Mines, etc., etc.

And for all purposes for which Steam Pumps can be used. Sold under full guarantee. Money will be returned if, from any cause, they should prove unsatisfactory. Send for Circular and Price List, fully describing them, to



A. CARR,
43 Cortlandt Street,
New York City.

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NEW YORK ENAMEL PAINT COMPANY. TRADE MARK.

FOR SAMPLE CARDS.

Our Paint is made of the very best material known to painters, viz: White Lead, Zinc and Linseed Oil, chemically combined, and is superior to any paint known to the trade. The advantages being that

It is ready for use.
It is applied with less labor.
It shows a beautiful enamel surface.
It does not chalk or peel off.
It does not run from nail holes or corners.
It is fire proof and water proof.
It covers old work as well as new.
It is the best paint for iron buildings.
It is equal to any for covering brick.
It is a perfect wood preservative.
Rain, before dry, does not wash it.
It is durable, retaining its enamel and freshness.

☞ Sold by the Gallon only, in Cans or Barrels.

Office, 43 Chambers St., N. Y.

Cornell Lead Co.,

Cor. Delaware and Virginia Streets, BUFFALO, N. Y

S. G. CORNELL & SON WARRANTED PERFECTLY PURE WHITE LEAD BUFFALO, N. Y.

TRADE MARK.

Manufacturers

WHITE LEAD Dry and in Oil,
Lead Pipe, Sheet and Bar Lead.

S. G. CORNELL, Prest. A. P. THOMPSON, Vice-Prest.
S. DOUGLAS CORNELL, Secy.

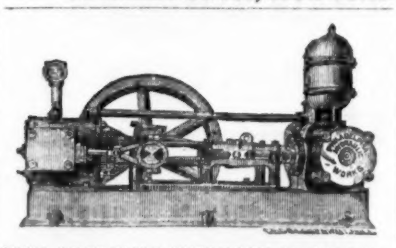
Edge Tools,

BROAD, SHINGLING AND CLAW HATCHETS.

The best low priced Goods in the Market.

Shingling Hatchets from $4.00 to $6.00 per dozen.
Claw " " $5.00 to $6.50 " "
Ohio and Kentucky Pattern Chopping Axes, all weights. The Trade only supplied.
Send for Price List.

JAMES E. HALSEY, Mfrs.' Agent,
76 Reade Street, New York.



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Evelina Street, east of 3d Street, below Walnut, Philadelphia, Manufacturers of

Steam Pumping Machinery

of every description. Send for Illustrated Price List.

White Lead, &c.

THE UNION WHITE LEAD MANUFACTURING COMPANY. PURE

Union White Lead Mfg. Company,
26 Burling Slip, New York.,
B. W. How, Secretary. James How, President.
MANUFACTURERS OF
White Lead, Red Lead, Litharge Orange Mineral.

Brooklyn White Lead Co.

BROOKLYN WHITE LEAD CO. INCORPORATED 1825. SUPERIOR PURITY, DURABILITY AND COLOR. PREMIUM LEAD. NEW YORK.

TRADE MARK.

White Lead, Red Lead and Litharge.
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JOHN JEWETT & SONS

Manufacturers of the well known Brand of

WHITE LEAD.

JEWETT & SONS' PERFECTLY PURE WHITE LEAD.

TRADE MARK.

Also Manufacturers of

LINSEED OIL
AND FLOOR OIL CLOTHS,
182 Front Street NEW YORK.

ATLANTIC WHITE LEAD CO. PURE. WARRANTED ROBERT COLGATE &

TRADE MARK.

The Atlantic White Lead and Linseed Oil Company,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York.

John T. Lewis & Bros.,

No. 231 South Front St.,
PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.
MANUFACTURERS OF
PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil AND PAINTERS' COLOR.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.—Sold Cast Steel ... ₱ lb 12½c
Peter Wright's ... ₱ lb, gold, 13c
Wilkinson's ... 11½c
Eagle, ₱ lb 11 cents, currency ... dis 15 %

Apple Parers.—Reading and Turn Table..per doz $8 50
Union ... per doz 8 00

Axes.—Mann's Light ... Per doz. $13 00 @ 14 00
Hunt's Light ... " 14 00 @ 14 50
Red Indian, all sizes ... " 12 50 @ 13 00
Red Chieftain, all sizes ... " 13 00 @ 13 50
Crown Prince ... " 13 50 @ 14 00

Augers and Auger Bits.—Pierce's Pat. Twist Bits ... dis 20 @ 25 %
Bates' & Ives' Bits ... dis 20&10 %
Douglass' Bits ... dis 30 %
Cook's Bits ... dis 25&10 %
Bonney's Pat. Hollow Augers ... dis 25 %
Russell Jennings' Bits ... dis 10 %
Bates' & Ives' Nut Augers ... dis 20&10 %
Douglass Nut Augers ... dis 30 %
Watrous' Ship Augers ... dis 10 %

Balances.—Landers, Frary & Clark's ... dis 10 @ 15 %
Chattillon's ... dis 10 @ 15 %
Morton's ... dis 10 @ 15 %
Common Spring, with Hook ... ₱ doz $1 33 @ 2 00

Bells.—Bevin Bros. Mfg. Co. Hand Bells ... dis 50 %
" Extra Light Hand Bells ... dis 50&10 %
Other makers light ... dis 50&10 @ 60 %
Connell's Door Bells ... old list net
Western and Kentucky ... dis 50 %

Boring Machines.—Bates' Mfg. Co., complete with augers ... dis 10 @ 15 %
Douglas' Mfg. Co., complete with augers..dis 10 @ 15 %
Common Augers ... $4 25 @ 4 00
Angular, Extra Auger ... 5 50 @ 5 00

Bolts.—Eastern Carriage Bolts ... dis 60&20 %
Western " " ... dis 60&20 %
Philadelphia " " ... dis 40 %
Wrought Shutter Bolts ... dis 45 %
Cast " " ... dis 35 %

Braces.—Barber's ... dis 30&10 @ 40 %
Bartholomew's ... dis 10 @ 15 %
Spoffard ... dis 37½ %

Butts.—Cast Fast Joint, Narrow ... dis 15 %
" " Broad ... dis 30 %
Cast Loose Joint ... dis 40 %
" Acorn Drilled ... dis 25&10 %
Wrought Loose Pin ... dis 15&10 %
" Table Hinges and Back Flaps ... dis 10 %
" Narrow ... dis 20 %
" Loose Joint ... dis 20&10 %
Parker's Blind Butts ... dis 35&40 %
Shepard's " " ... dis 35&40 %
Clark's " " ... dis 35&40 %
Lull & Porter's " ... dis 25&5 %
Palmer's " No. 1 for wood ... dis 40&10 %
" " No. 2 for brick ... dis 25&10 %
Garretson's " ... dis 40&10 %

Chains.—German Halter ... gold list dis 15 %
" Coil ... gold list dis 15 %
Galvanized Pump ... ₱ lb 15c
English Coil, less than cask ... add ½c ₱ lb
Common Chain ... ½c ₱ lb less
Best Proof Coil Chain—

₱ lb	14½	11¼	10½	10	9¾	9½	9c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 500 lbs., discount ½c per lb. Common Chain, ½c per lb. less than proof.

Chisels—Socket Framing ... dis 60 @ 60&5 %
Socket Firmer ... dis 60 @ 60&5 %
Tang " ... dis 40 @ 40&5 %
Beaty's Framing and Firmer ... dis 10 @ 10&5 %

Casters.—Porcelain Wheel ... dis 20&10 %
Iron ... dis 20&10 %
Brass ... dis 20&10 %

Clothes Wringers.—Universal ... per doz $72 00
Novelty ... " 72 00
Providence ... " 72 00
In lots of 2 dozen, discount $2 per dozen.
King Wringers (Iron Frame) ... per doz $68 00

Coffee Mills.—Common Box and Side ... dis 15 %
Patent Box and Side ... dis 10 %

Cutlery.—American Pocket (best) ... dis 20 @ 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.

Drawing Knives.—Hart Mfg. Co.'s ... dis 60 @ 60&5 %
Concave Adjustable Handle ... dis 10 %
Beaty ... dis 10 %

Files.—Nicholson Mill Files ... new list, 25 00 to £ cur
Nicholson Bastard ... " 5 00 to £ cur
" Taper ... " 5 00 to £ cur
Butcher's Mill ... $5 75 to £ gold
" Bastard ... 5 50 to £ gold
" Taper ... 5 50 to £ gold
Moss & Gamble—Mill, Taper and Bastard ... 5 50 @ 5 25 to £ gold

Fluting Machines.
Royal, No. 1, 4½ inch Rollers ... list $6 00
" No. 2, 6 " " ... list 7 00

Hammers and Hatchets.
Yerkes & Plumb's ... dis 10 %
Hammond & Son's ... dis 10 %

Hinges.—Strap and T ... dis 30 %
Bonney's No. 1 Gate ... dis 25 %
" No. 2 and 3 ... dis 35 %

Horse Nails.

Nos.	6	7	8	9	10
Ausable	27	25	24	23	22
Globe	29	26	25	24	23
Brundage	26	24	23	22	21
Nos. 5	6	7	8	9	10
Putnam	32	28	26	25	24	23

On Ausable, Globe and Brundage 1000 lb lots ... dis 5 %

Knobs.—Door (regular manufacture) ... dis 40 %
Porcelain and Mineral ... dis 40 %

Locks and Latches.—Rim and Mortise ... dis 40 %
Till and Cupboard ... dis 25 %
American Padlocks ... dis 40 %
Trunk Locks ... dis 5 @ 10 %
Thumb and Roggens Latches ... net @ dis 10 %

Mattocks.—Long and Short Cutter ... dis 15 %
Western Pattern ... dis 15 %
Pennsylvania Pattern ... dis 15 %

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets ... dis 20 %
Stebbins' Gates ... dis 60 @ 60&10 %
Lincoln's " ... dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum ... dis 10 @ 10&10 %
Taylor's Petroleum Faucets ... dis 20 @ 20&10 %

Rakes.—Cast Steel Garden ... dis 30 %
Malleable Garden ... dis 33⅓ %
Wood Head Iron Teeth ... dis 30 @ 40 %

Rules.—Stanley Rule and Level Co ... dis 60 @ 60&10 %
Steven's and Hubbard's ... dis 60 @ 60&10 %

Squares.—Steel and Iron, new list ... dis 50 %

Saws.—Disston's Cross Cut ... dis 12½ %
Disston's Hand ... dis 7½ %
W. McNiece's H'd, Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list ... dis 30 %

Shovels and Spades.
Rowland's Plain Back, list Feb. 1873 ... dis 20 %
" Back Strap " ... dis 20 %
Oliver Ames & Sons ... net list
Brady Shovel Co ... dis 7½ %

Sad Irons.—Reading (planed face) ... per lb. 5½c.
Coquanock (polished face) ... 5c.

Stove Polish.—Gem ... ₱ gross, $5 00
Onyx ... $5 00

Scythes.—Golden Clipper ... ₱ doz. $11 50
Clipper No. 10 ... " 10 50
Common Scythes ... ₱ doz $7 00 @ 10 00

Screws.—Iron ... new list, April 1st, 1873, dis 47½ %
Brass ... dis 50&10 %

Spoons.—Plated Spoons, Rogers Bros.' ... dis 25 @ 25&5 %
Britannia, Parker's and Boardman's ... dis 25 @ 25&10 %
German Silver ... list net
" Light ... dis 5 %

Try Squares.—Disston's ... dis 12½ %
Stanley Rule and Level Co ... dis 40&10 %
Willis Thrall, No. 2 ... dis 30&10 %
Willis Thrall, No. 1 ... dis 25&10 %

Tacks, &c.—Half Weight Tacks ... dis 67½ %
" by the case ... dis 67&7½ %
Clout and Finishing Nails ... 7½ %
" " " by the case ... dis 7½ %

Traps.—Genuine Oneida—Newhouse list ... dis 20 %
Imitation " " ... dis 20&10 %

Wrenches.—Coes Genuine ... dis 30 @ 30&10 %
Coes Imitation Wrought Bar ... dis 40 @ 45 %
" " Malleable Bar ... dis 45 @ 50 %
" " (Kellogg) Malleable Bar ... dis 50&5 %
Tafts Wrought Bar ... 60 %
Tafts Malleable Bar ... 65 %

Wire.—No. 0 to 18 ... dis 25 @ 30 %
No. 19 to 26 ... dis 27½ @ 30 %
No. 27 to 36 ... dis 33⅓ @ 35 %
Coppered 0 to 12 ... dis 15 @ 20 %
Tinned Broom Wire ... dis 15 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.
June 28, 1873.

Axes, Chopping—"Francis Axe Co." ... $13 00
Augers—C. S. Cut ... dis 30 %
Bits, Auger—Pierce's ... dis 25 %
" Jennings' ... dis 10 %
Bells, Cow—Yaw's Genuine ... dis 20 %
Bellows—Smiths' ... dis 20 %
Bolts—Carriage and Tire, Diamond Neck ... dis 60&20 %
Braces, Bit—Barber's ... dis 30&10 %
" Spofford's Patent ... dis 37½ %
Brads, Cut ... dis 50&7½ %
Boards—Stove, Brooks' Patent, new list ... dis 30 %
Butts—Brass ... dis 20 %
Cast Loose Joint ... dis 40 %
" " Pin ... dis 40 %
" " " Japanned ... dis 30 %
" " " Silver Tipped ... dis 20 %
Wrought Narrow ... dis 10&10 %
" Broad, Loose Joint ... dis 20&10 %
" Table and Back Flaps ... dis 10 %
Wrought Butts, Loose Pin ... dis 15&10 %

Belting—Rubber ... dis 30 @ 33⅓ %
Leather, new list ... dis 30 @ 30&5 %
Beaters, Egg, "Peerless" ... per doz $4 50
Brick—Bath (box of 2 doz) Best English ... $1 50
"Rutherford" ... $1 25
Bung Borers—"Enterprise" ... dis 20 %
Chalk—White, Carpenter's ... ₱ gross, 60c
Red, Carpenter's ... 80c
Blue ... 90c
Crayon School ... 14c
Chisels—Firmer Socket ... dis 60 @ 60&10 %
Framing Socket ... dis 60 @ 60&10 %
Corner Socket Chisels ... dis 60 @ 60&10 %
Slick's Carpenters' ... dis 60 @ 60&10 %
Castings—Malleable ... ₱ lb 10½c
Cherry Seeders ... per doz $12 00
Elbows—Corrugated ... 5 5½ 6 7
Charcoal ... $4 25 5 25 5 25 6 50
Russia ... 10 00 13 00 13 00 14 00
Files—Wheeler, Madden & Clemson's ... dis 42½ %
Freezers, Ice Cream—"Champion" ... dis 33⅓ %
Gates—Molasses—
Patent Self-Measuring ... ₱ doz., $48 00; dis 10&10 %
Hinges—Window Blind—
Shepard's Standard, and Clark's ... dis 40 %
Garretson's ... dis 40&10 %
Wrought Strap and T ... dis 30 %
Hods, Coal—Plain, Black and Galvanized ... new list net
Funnel, Black and Galvanized ... new list net
Fancy and Helmet ... new list net
Hammers—Maydole's ... net
Yerkes & Plumb's ... 5 @ 10 %
Hooks and Staples—Wrought ... dis 60 %
Hooks—Bell ... dis 50 %
Hasps and staples—Wrought ... dis 60 %
Planes, Bench ... dis 15 %
Sad Irons ... ₱ lb 5½c
Kettles—Brass ... ₱ lb, 50c
Enameled ... new list dis 40 %
Knives, Drawing—Oval No. 1 ... dis 60 @ 60&10 %
Razor Blade ... dis 30&10 %
Lanterns "Peerless," ... No. 1 ... dis 10 %
"Radiant" ... No. 75 100 125
₱ doz $36 00 $12 50 $15 00 dis 10 %
₱ doz $13 18 $13 15 $22 50 $22 50 dis 20 %
Tubular ... $12 50
" with Guards ... 13 00
Mica ... net 60 lbs., 5 %; 100 lbs., 10 %; 200 lbs., 20 %
Machines—Apple Paring, "Reading" ... $9 50 ₱ doz
Tinners' ...
Mills, Coffee—Box and Slide, common ... dis 10&5 %
Box Union and Eagle ... dis 10 %
"Enterprise" ... dis 20 %
Nails—Cut, Chesapeake ... $4 50 @ $4 60
Clout and Finishing ... dis 7½ %
Shoe ... dis 7½ %
Horse, Ausable ... No. 5 6 7 8 9 10
30 27 25 24 23 22c
" " Finished & Pointed ... add 1c ₱ lb
" " 1000 lbs ... dis 5 %
" Clinton ... No. 6 7 8 9 10
23 21 20 19 18c
Packing—Rubber ... dis 30 @ 33⅓ %
Pencils, Slate—Soapstone ... 4 5 6 in.
30 40 50c. ₱ 100
Case lots ... dis 20 %
Paint—White Lead, U. S. Gov't ... ₱ lb 9¼c
Rivets—Iron, Black and Tinned ... dis 20 %
Copper ... dis 10 %
Rope—Manila, ¾ inch and larger ... ₱ lb 17¼c
Rules—Boxwood and Ivory, Stephens ... dis 50&10 %
Staples—Blind, Boardman's Pat., ½ & ¾ ... ₱ lb 37½c
Skates—Winter's ... dis 20 %
Straps, Skate—Russet and Black ... net @ 20 %
Spoons, Iron Tinned ... dis 10 %
" " by the case ... dis 20 %
Plated Rogers' A No. 1 ... dis 25&5 %
Britannia ... dis 40 %
Squares—Steel and Iron ... new list 50 %
Shoes, Horse—H. Burden & Sons ... ₱ keg $6 50
Shovels & Spades—Shepard, Forsyth & Dennison ... 15 %
Saws—Henry Disston & Sons ... dis 5 %
Scales—Buffalo Scale Works ... dis 25 %
Fairbanks ... dis 15 %
Shears—Seymour's ... dis 50 %
Tools—"Tinmen's" ...
Traps, Steel—Newhouse ... dis 20 %
Tacks—Half Weight Am. Iron ... dis 70&7½ %
Vises—Parallel, Buffalo ... dis 15 %
Wrenches—Coes' genuine ... dis 30&10 %
Coes' Imitation ... dis 50&10 %
Tafts' Pattern ... dis 65&10 %
Ware—Tinned and Iron ... dis 20 %
Stamped and Japanned ... net
Cast Iron Hollow ... dis 20 @ 25 %

Tin Plates.—Add for each X ... 2·5
10x14, IC. Charcoal ... $13 75 14x20 C. terne ... $12 00 @ 12 50
12x12, " " ... 1·5 20x28 C. ... 26 50
12½x17, " " ... 1·5 20x28 X. ... 30 50
14x20, " " ... 1·5

Pig Tin—Straits ... 39c @ 40
Banca ... 46c @ 47
Bar Tin ... 41c

Solder ... No. 1, 21c; No. 2, 28c

Sheet Zinc, "Lasalle" 1000 500 100 lb casks
$11 25 $11 35 $11 55 ₱ 100 lbs

Iron Wire—Bright and Annealed ... dis 25 %
Coppered ... dis 20 %
Tinned ... dis 15 %
Tinned Broom, Nos. 20 21 22 ... 20c 21c 21c

Copper—Sheathing 14 @ 18 oz ... ₱ lb 38c
Planished ... ₱ lb 44 @ 46c
Bottoms ... ₱ lb 40c
Bolts ... ₱ lb 45c
Braziers' Sheets ... ₱ lb 45c

Sheet Iron.—
24 Common ... $6 05
24 W. D. Wood & Co., Smooth Finish ... 7 85
Am. Russia ... A. 14c B. 12c
Gen. Russia, No. 1 stained ... 20¼c
" " clean ... 21¼c
Galvanized ... dis 20 %

BOSTON.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—	₱ box	I. C. Coke	@ $12 00
I. C. Charcoal	@ $13 50	" Terne ... 11 50 @	13 00
Pig Tin.—	₱ lb	Straits, gold	32c
Banca, gold	37c	English "	32c
Copper.—	₱ lb	Braziers	40c
Sheathing	40c	Ingot	28c
" Yellow	c	Old	26c
Bolt	40c		
Lead.—	₱ lb	Sheet and Pipe	9·45c
Spanish Pig, gold	6¾c	Old	6¾c
Spelter.	₱ lb	American, gold	7c
Silesian, gold	8c		

Zinc.—Sheet ... ₱ lb 10¾c
Iron.—Sheet Iron, Russia, gold ... ₱ lb 15c
Sheet Iron, English ... " 7c
" " American ... " 7¼c
" " Galvanized ... 11c @ 18c
Swedes Bar Iron, Flat, gold ... ₱ ton, $145 00 @ $155 00
" Shoe Shapes, gold ... 160 00 @
Norway Bar Iron, Flats, gold ... 145 00 @ 152 00
" Shapes, gold ... 157 50 @
" Round, 2 in. to ⅞ in., gold ... 147 50 @ 152 50
" " 11-16 to ⅝ in. " ... 155 00 @
" " 5-16 to ½ in. " ... 167 50 @
" Nail Rods, Rolled " ... 185 00 @
" " U. B. " ... 172 50 @
" " Benzon " ... 167 50 @
" " Vasa " ... 162 50 @
" " N I W " ... 160 00 @
English Refined Bar Iron ... 92 50 @
Scotch Pig Iron ... 49 00 @ 45 00
American " ... 40 00 @ 49 00
Wrought Scrap Iron ... 45 00 @

Steel.—	₱ lb	German	11c
Eng. Tool, gold	16c	Spring	9c
" Mach. "	10c	Tire	8c
American Tool	16c	Sleigh Shoe	6¾c
" Mach	11c	Toe Calk	8¾c
Bessemer ... 8¾c @ 9¾c			

PITTSBURGH.

Card Rates, 60 days.

Flat Bar.—		1¼ & 1⅜ x ⅜ to ⅝ in	4·0c
1½ to 4 x ⅜ to 1 inch	3·8c	1 & 1⅛ x ⅜ to ⅝ in	4·1c
4½ to 6 x ⅜ to 1 inch	4·0c	¾, ⅞ & ⅝ x ⅜ to ⅝ in	4·2c
1⅛ to 6 x 1⅛ to 1½ in	4·2c		
Horse Shoes.—		Nail rods	7·7c
All sizes	5·8c		
Heavy Bands.—		⅞ to 1⅛ x ¼ & 5-16 in	4·8c
3¼ to 6 x ¼ & 5-16 in	4·4c	⅝ to ¾ x ¼ & 5-16 in	5·0c
1½ to 3¼ x ¼ & 5-16 in	4·5c		
Light Bands.—			
3 to 6 x 3-16 to No. 12	4·8c	1 to 1⅞ x 3-16 to No. 12	5·4c
1⅛ to 2⅞ x 3-16 to No. 12	5·0c	⅝ to ⅞ x 3-16 to No. 12	6·0c
Hoops.—2½ to 3 in	5·1c	1 in	6·3c
3⅛ to 4¼ in	5·3c	⅞ in	6·8c
1⅞ to 2 in	5·3c	¾ in	7·3c
1⅜ to 1 11-16 in	5·6c	⅝ in	7·8c
1⅛ & 1¼ in	5·9c	½ in	8·3c
Round and Square.—		½ to 7-16	4·5c
1 to 1⅜ in	3·8c	⅜ in	4·6c
2 to 2⅞ in	4·1c	5-16 in	5·0c
3 to 3⅞ in	4·3c	¼ in	5·4c
3⅞ to 4 in	4·8c	3-16 in	7·4c
⅝ to 9-16 in	4·2c		
Oval Iron.—		⅜ in	4·8c
⅝ to 1⅛ in	4·4c	⅝ in	5·4c
⅝ to ⅞ in	4·6c		
Half Oval and Half Round.—		⅜ in	5·9c
⅜ to 1⅛ in	4·7c	¼ in	7·4c
⅜ to ⅞ in	5·2c		

	Boiled.	Charcoal.	Jun.
Sheet Iron, 10 to 14	5·4	6·9	8·4
" 15 to 20	4·6	7·1	8·6
" 21 to 24	4·8	7·3	8·8
" 25 to 26	5·0	7·5	9·0
" 27	5·2	7·7	9·2

All sheets over 28 in. wide, ½c. ₱ lb extra.

Tank Iron—		Heads flanging	8·5c
3-16, ¼ & ⅜ in. thick	5·6c	Plow Slabs	6·4c
Boiler Plate Iron	7·5c	Plow Wings	6·9c
Heads not flanging	6·7c		
Railroad Iron—Countersunk and Punched.—			
1⅛ x ⅜, 7-16 & ½ in	5·2c	1½, 1⅝ & 2 x ⅜ & ⅝ in	4·7c
1⅛ x ⅜ & 5-16 in	5·7c	1⅞ x ⅜ in	4·9c
Extras for Cutting to Length.—			
Flat bars and rounds and squares	1c	Light bands and wagon box iron	4c
Flat bars for tire	1c	Hoops	5c
Heavy bands	3c		

Nails—Standard list ... $4 75

The following are the Card rates of Lewis, Oliver & Phillips:
Iron, standard list, assorted sizes, for large orders, 3·8c, card rate, 2 % off net.

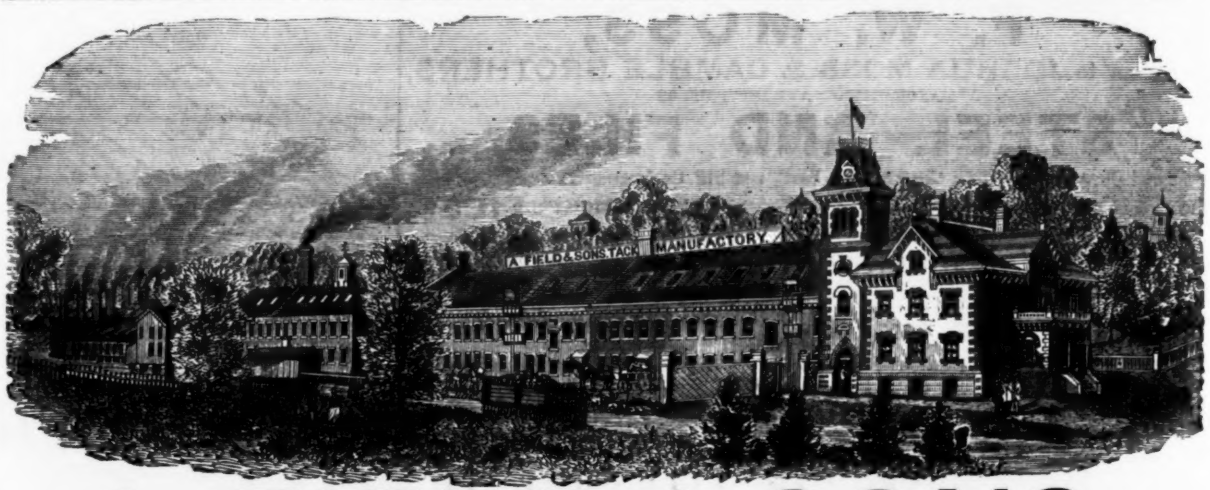
Iron Wedges ... 5¾c ₱ lb net
Norway Nail Rods ... 9½c ₱ lb net
Fence Pickets—
⅜ round, bent to shape .30c ₱ ft. of fence, less 5 % off net
Discount off Standard List.
Carriage and Tire Bolts (new list) ... 60&15 % off net
Plow Bolts ... 25 % off net
Stove Bolts ... at the list price
Machine and Square Head Bolts ... 25 % off net
Coach and Lag Screws ... 25 % off net
Bolt Ends ... 20 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅝ in ... 6 c ₱ lb off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in ... 4½c ₱ lb off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅝ in ... 7 c ₱ lb off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅜ in ... 5 c ₱ lb off net
Nuts and Washers in 25 lb. boxes, 1c ₱ lb ex. Nuts and Washers in lots less than one keg each size, 1c ₱ lb ex.
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 5c ₱ lb net; ⅞, ¾ in. diam. 5c ₱ lb net; ⅝ in. diam. 5½c ₱ lb net.
Patent Headed Harrow Teeth, packed in casks, ½c ₱ lb ex
Skein Bolts, in bulk, in lots of 5 kegs or more, ⅝ in. diam. 8c ₱ lb net; 9-16 in. diam. 9c ₱ lb; ½ in. diam. 10c ₱ lb. 1c ₱ lb extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ¾ to 1 in. diam. 9¼c ₱ lb net; ⅝ in. diam. 10½c ₱ lb net; ½ in. diam. 12½c ₱ lb net.
Screw and Strap Hinges, in lots of 100 pairs or more, 14 to 36 in. long, 7c ₱ lb net; 8, 10 & 12 in. long, 8½c ₱ lb net.
Strap and T Hinges ... 20 % off net, delivered
Screw Hitching Rings ... $6 50 ₱ 100 net
Duck Nest Tuyere Irons ... $16 00 ₱ doz net
Cast Iron Washers ... ₱ lb 4¼c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long ... ₱ lb 5¼c net
1 to 2 in. diam. from 4 to 8 ft. long ... " 5½c net
1 to 2 in. diam. from 1½ to 4 ft. long ... " 6 c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long ... " 6¼c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long ... " 6¾c net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at Screw End, ₱ set of	8 bolts	55c
12 " " ½ " "	8 "	70c
10 " " 9-16 " "	8 "	90c
12 " " 9-16 " "	8 "	90c
14 " " 9-16 " "	8 "	$1 00
10 in. long by ⅝ at Screw End, ₱ set of	8 bolts	1 00
12 " " ⅝ " "	8 "	1 00
14 " " ⅝ " "	8 "	1 10
16 " " ⅝ " "	8 "	1 20

5c ₱ set for each additional inch over 14 in. All lengths made.
Wagon Box Rods, narrow track, each ... 18c
" " wide track, each ... 20c
Single Tree Irons, ₱ set of four pieces ... 38c
Wrought Iron Bolster Plates, 2½ in. wide, ₱ set ... 60c
" " " 3 " " ... 65c
" " " 3¼ " " ... 70c
" " " 3½ " " ... 75c
Wagon Brake Ratchets, each ... 16½c
" " " finished with guard, each ... 15 c
Wrought Hammer Straps, heavy pattern, each ... 16 c
" " " light " each ... 13½c
" Rub Irons, each ... 11 c
Stay Chain Hooks, each ... 8 c
Double and Single Tree Clips, figure 1, each ... 9 c
" " " " " 2, each ... 10 c
" " " " " 3, each ... 12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 100 sets ... dis 25 %
Wagon Box Staples, 1½ to 2½ in. to clinch, ₱ 1000 $13 50 net
" " Box Iron, to rivet on, ₱ 1000 9 50 net
Neck Yoke Eyes, each ... 5½c net
" " with ⅜ rings, each ... 8½c net
King Bolts, ⅞, 1, 1⅛, and 1¼ in. diam ... ₱ lb 5¼c net
Wagon Rivets, ex. large, oval and steeple head, ¼ in. diam. all lengths ... " 10 c net
Wagon Rivets, 3-16 in. diam., all lengths ... " 12 c net
" " & Nails, in 5 lb paper boxes ... ₱ lb 1c extra
" " in 25 lb wood " ... " ½c extra
Wagon and Hinge Nails, ¼ in ... ₱ lb 17 c net
" " 3-16 in ... " 19 c net
Double Tree Plates ... } " 9 c net
Coupling " ... }
Tongue " ... }
Neck Yoke Plates ... " 12 c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₱ lb as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in, ₱ lb 11½c net; ¼ in., 12½c. net



Steel.

THREE
1st CLASS PRIZE MEDALS.
CLASSES 1, 21, 22,
Great Exhibition of Industry,
LONDON, 1851.

MEDAL OF HONOUR,
SOCIETY OF ARTS & INDUSTRY,
LONDON, 1856.

1st CLASS
PRIZE MEDAL, CLASS 1st
UNIVERSAL
EXHIBITION OF INDUSTRY
PARIS, 1855.

COCKER BROTHERS,

SUCCESSORS TO
SAML. COCKER & SON,
(Established 1752.)
SHEFFIELD, ENGLAND

MANUFACTURERS OF

CAST, SHEAR, SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES. &c.

ALSO

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STEEL,

AND IMPORTERS OF IRON
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CHICAGO, Crerar, Adams & Co.......NEW ORLEANS, Folger & Co.
CINCINNATI, Augustus Wessel.......SAN FRANCISCO, Huntington, Hopkins & Co.

F. W. MOSS,

Successor to JOSHUA MOSS & GAMBLE BROTHERS,
MANUFACTURER AND IMPORTER OF

STEEL AND FILES.

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MOSS & GAMBLE SUPERIOR C. S. "FULL WEIGHT" FILES,
Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel.
Also, manufacturer of
Sheet Cast Steel, Shear, German, Round Machinery, Hammer, Fork and Shovel Steel
And GENERAL MERCHANT.
A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

MANUFACTURERS OF

STEEL, STEEL WIRE, &C.,

AND GENERAL MERCHANTS,
CARLISLE WORKS, SHEFFIELD, ENGLAND.

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Philadelphia, 505 Commerce Street.
Boston, 21 Oliver Street.

BARROW HÆMATITE STEEL COMPANY,

LIMITED.
BARROW IN FURNESS,
LANCASHIRE, England

TRADE MARK

MANUFACTURERS OF

Steel Rails, Tyres, Wheels,
Axles, Shafting, Boiler & Ship Plates, Bessemer Pig Iron, etc., etc.
CHAS. CONGREVE & SON,
Sole Agents for the United States,
104 & 106 John Street, opposite Cliff Street, NEW YORK.

J. & RILEY CARR,

MANUFACTURERS OF SUPERIOR

STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;
ALSO THE CELEBRATED
DOG BRAND FILES,
Unsurpassed, if equaled, in quality.

CORPORATE MARK
STANCH

Bailey Lane Works, Sheffield, England.
Warehouse 82 John St., New York.
Established 1810.
HENRY MOORE, Attorney.

Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)
MANUFACTURERS OF THE

CELEBRATED CAST STEEL,

WARRANTED MOST SUPERIOR FOR TOOLS.

DARNALL WORKS,
ATTERCLIFFE FORGE,
WEST STREET WORKS,
} SHEFFIELD, ENGLAND.

IMPORTERS OF FILES,
AND
AGENTS FOR ARMITAGE'S GENUINE MOUSEHOLE ANVILS.

NEW YORK, Edward Frith, 16 Cliff. | NEW ORLEANS, Rich'd Rhodes, 71 Camp.
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PHILADELPHIA, Wm. H. Sowers. | MONTREAL, Saint Paul St.
CLEVELAND, O., Cleveland, Brown & Co. | NEW HAVEN, Ct., Atwater, Wheeler & Co.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of "CHOICE" Extra Cast Steel.

Manufacturers of all Descriptions of Steel.
Manufacturers of Every Kind of Steel Wire.
Don Works, Sheffield, England.
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MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear

STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

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Office of S. & C. WARDLOW, 13 Gold Street, New York.

In calling the attention of consumers of Steel in any of the varieties above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed.

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for
Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.
ALSO STEEL of superior quality for Turning Tools, Taps, Dies, Drills, &c.
Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.
☞ *Makers of the Celebrated ROCK BORING DRILL STEEL.*
Warehouse, 57 John Street, New York.

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Troy, N. Y.,
Office in New York City, 56 BROADWAY.
MANUFACTURERS OF

Bessemer Railway Steel,
MERCHANT BARS, TIRE AND SHAFTING,
Railroad Iron, Pig Iron, Merchant and Ship Iron,
AGENCIES IN BOSTON AND PHILADELPHIA.

AULTMAN STEEL CO.,

Canton, Ohio,
MANUFACTURE

WELDING TOOL STEEL,

Warranted superior to any manufactured in this or any other country.

Established 1838.
EVERY DESCRIPTION OF ENGRAVING FOR
BOOK, CATALOGUE OR NEWSPAPER USE
done at short notice.
Machinery.
VIEWS OF BUILDINGS
A SPECIALTY.
FIRST-CLASS WORK AT LOW PRICES.
SATISFACTION GUARANTEED

Steel.

Sheffield Steel Works.

(Established in 1848.)
SINGER, NIMICK & CO.
Pittsburgh, Pa.,
Manufacturers of Extra Quality Tool
CAST STEEL,
Patent Rolled
SAW PLATES,
All descriptions of Cast and German
Spring and Plow Steel
Elliptic and Side Springs, Seat Springs,
AXLES, STEEL TIRE,
Plow Wings, Shares, Cultivators,
Reaper Bars, Crow Bars, &c., &c.
Warehouse, 83 Water and 100 First Streets

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works,
Wolverhampton, England,
MANUFACTURERS OF
"Jenks" Spring Steel, Cast and Swedes Spring Steel,
TIRE, TOE CORK, SLEIGH SHOE, BLISTER & PLOW STEEL.
Also, Plow and other Iron.
VAN WART & McCOY, Agents,
43 Chambers St., New York.
A full assortment of "Jenks" Spring Steel in stock.

MILLER, BARR & PARKIN,
Crescent Steel Works,
PITTSBURGH, PA.,
Manufacturers of all descriptions of
STEEL
EQUAL TO ANY IN THE MARKET.
Office.......339 Liberty St.,
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Gunpowder.

GUNPOWDER.

DUPONT'S
Sporting, Shipping, and Mining
POWDER.
DUPONT'S GUNPOWDER MILLS,
ESTABLISHED IN 1801,
Have maintained their great reputation for 70 years. Manufacture the
Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.
Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER
of all kinds and descriptions.
For sale in all parts of the country. Represented by
F. L. KNEELAND,
70 Wall Street, NEW YORK.

GUN-POWDER

LAFLIN & RAND POWDER CO.
21 Park Row, New York,
invite the attention of the the Hardware Trade to their facilities for delivering
BLASTING, MINING and RIFLE
POWDER
IN EVERY PART OF THE UNITED STATES.
from having agencies and magazines at all prominent points, beside our works at
Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale, and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.
The superiority is well known of our brands Rifle Powder:
Orange Rifle, *Orange Ducking,*
Lightning, *Audubon.*
SAFETY-FUSE at wholesale.

CHICAGO.

(Reported by Markley, Alling & Co.)

Agricultural Implements.—
Scythes—Dunn Edge Tool Co.....dis 25 %
Hay and Manure Forks—Otsego extra C. S.....dis 25 %
Hoes and Garden Rakes—Jackson and Otsego....dis 25 %
Scythe Stones.....dis 25 %
Scythe and Bush Snathes.....dis 20 %
Harvest Rakes and Barley Forks.....dis 20 %
Revolving Horse Rakes.....dis 20 %
Handles—Fork and Shovel.....dis 20 %
Cradles—Nithington, Cooley & Co.....dis 20 %
" —Genuine Morgan.....₱ doz net $36 00

Augers and Bits.—
Ives' extra C. S....dis 20 % | Snell's.....dis 10 %
Jennings'.....dis 5 % | " Car Bits.....dis 10 %
Cook's.....dis 25 %

Axes.—Amoskeag Yankee.....₱ doz $14 00
Amoskeag Crescent..... " 14 50
Hunt's Yankee..... " 14 50
Kennebeck Yankee..... " 12 00
Lippincott "..... " 14 00
" Crown..... " 14 50
" Beveled..... " 14 50
Jefford's Silver Steel..... " 13 00
Red Warrior, Beveled..... " 14 50
Kennebeck, Handled..... " 16 00
Boy's, Handled..... " 12 00

Bolts.—Carriage and Tire.....dis 60&20 %
Cast Barrel and Shutter.....dis 20&10 %
Wrought Iron Barrel.....add 10 %
" " Square.....net list

Butts.—Cast Fast Joint, Narrow.....dis 10 %
Cast Fast Joint, Broad.....dis 20 %
" Loose Joint.....dis 40 %
" " Pin, Reversible.....dis 35 %
" " Japanned.....dis 30 %
" " Silver Tipped.....dis 30 %
Wrought Narrow, Fast Joint.....dis 20 %
" Broad " ".....dis 15 %
" " Loose ".....dis 15 %
" Loose Pin.....dis 15 %
" Table.....net list
" Brass.....dis 10 %
Garretson's Blind Butts, Wood.....doz sets $2 00
" " Brick.....doz sets 3 00
Parker's " Wood.....doz sets 2 25
" " Brick.....doz sets 3 25

Casters.—Iron Plate.....dis 20 %
Brass Wheel Plate.....dis 20 %
Porcelain Wheel Plate.....dis 20 %
" " Bed.....dis 20 %
Iron Wheel Bed.....dis 20 %

Chisels.—Butcher's Tanged Firmer.....dis 30 %
" Long Paring.....dis 30 %
Witherby Socket Framing.....dis 50&15 %
" " Firmer.....dis 50&15 %
" " Corner.....dis 50&15 %
" " Slicks.....dis 50&15 %

Coffee Mills.

Box 4 Iron	$3 75	Box 85 Cast Steel	$13 00
" 103 "	5 25	Side 50	4 75
" 102 "	6 25	" 60	5 75
" 107 Britannia	7 50	" 70	7 25
" 106 "	8 50	" 90	18 00
" 25 Union	11 00	" 15 Union	7 00
" 35 "	13 00	" 20 "	8 00
" 75 Cast Steel	11 00		

Cutlery.—American Table.....dis 30 %
" Pocket.....dis 25 %

Door Springs.—Torry.....₱ doz $7 50
Rubber.....4 00
Boon's.....5 00

Drawing Knives.—Witherby Tool Co.....dis 50&15 %
Ohio Tool Co.....net list

Files.—Butcher's.....$7 00 £
Nicholson's.....$5 50 £

Hammers.—Yerkes & Plumb.....net list
Maydole's.....net list | Cheney.....net list

Handles.—
Extra Axe.....doz. $3 00 | Coal Pick, No. 1...₱ doz $2 00
No. 1 Axe.....2 25 | Sledge, No. 1.....3 00
No. 2 Axe.....2 00 | Hatchet.....65
R.R. Pick, No. 1.....2 00 | Hammer, A. E.....65

Hatchets.—Amoskeag Shingling.....$7 25 $8 00 $8 75
" Claw.....7 75 8 50 9 22
" Lath.....7 50 8 25 [illegible]
" Solid Steel.....12 00

Hinges.—Strap and T.....dis 20 %
Screw Hook and Strap, 6 to 12 in.....net, 10c. ₱ lb
" 14 to 24 in.....net, 9c. ₱ lb
Hook and Eye Hinges.....net 13c. @ 16c. ₱ lb
Gate, No. 35, State.....₱ doz $3 50
" No. 3, In and Out.....3 50
" Ellis's Pat.....7 50

Horse Nails.—Northwestern, 8d.....24c
Ausable, 8d.....24c
Globe, 8d.....26c

Kettles.—Brass.....50c | Enameled.....dis 15 %

Locks and Knobs.— | Eagle Lock Co.....dis 15 %
Norwalk Lock Co. dis 35 % | Am. Pad Locks.....dis 25 %
Branford.....dis 40 % | Cont'al Lock Co.....dis 10 %

Meat Cutters.— | Woodruff Patent.....net list
Haven's Patent.....net list | Stowe's Sausage
Hale's.....dis 40 % | Stuffers.....net list

Molasses Gates.—
Stebbin's Patent.....dis 40 % | Enterprise Patent.....dis 5 %

Nails.—10d to 60d.....per keg $5 00

Oil Stones.—Washita No. 1.....[illegible]5c ₱ lb
Washita Slips.....55c "
Hindostan No. 1.....net 9c "
" Axe.....net 10c "
" Slips.....net 15c "

Picks and Mattocks.—Picks, Railroad, Axe Finish.....₱ doz $13 50
Picks, Coal, Axe Finish.....10 00
Mattocks, L. C., Axe Finish.....16 50
" S. C., ".....16 00
Grub Hoes, Axe Finish, No. 2.....12 00

Planes.—Ohio Tool Co., Bench.....dis 15 %
Sciota.....dis 20 %
A. Howland & Co., Bench.....dis 15 %
" Fancy.....dis 15 %
Bailey Patent Iron.....dis 15 %
Plane Irons, Butcher's.....dis 30 %

Rivets.—Iron..dis 10 @ 15 % | Copper, No. 7 net, ₱ lb, 60c

Rules.—Stanley Rule and Level Co.....dis 50&10 %
Hubbard & Curtiss Mfg. Co.....dis 50&10 %

Sad Irons.—Best A No. 1.....₱ lb, 5 @ 5½c
" Pat. Face Star.....₱ lb, 5½c

Sandpaper.—Wiggin & Stevens, No. 0 to 1½.....₱ ream, net, $4 50
" No. 2 to 3.....5 00

Sash Locks.—Champion.....₱ gross, net, $12 00
Hopkins & Dickinson.....dis 10 %
Judd's Patent.....dis 10 %
Corbin's Patent.....dis 10 %
Clark's Patent.....dis 20 %

Saws.—H. Disston & Sons.....dis 5 %
Champion X Cut.....₱ foot, net, 65c
M. A. & Co. X Cut.....55c
Lightning Cut.....70c

Screws.—American Screw Co.—Iron.....dis 45 %
American Screw Co.—Brass.....dis 50 %
" " Blued Rd. Head.....dis 25 %

Shovels and Spades.
Ames' Black Shovels.....₱ doz $14 50
" Polished ".....15 50
" Patent ".....18 00
Alling ".....17 50
" Molders'.....18 00
Crane's Black ".....12 00
" Polished ".....13 00
Smith's " B. S. L. H. Rd. Pt.....13 50
" " B. S. D. H. Rd. Pt.....14 00
Ames' Black Spades.....16 00
" Polished ".....17 00
" Patent ".....17 50
Alling ".....15 50
Crane's Black ".....12 50
" Polish'd ".....13 50

Scoops.—Alling Steel Polished, No. 2.....₱ doz $14 00
Alling Steel Polished, No. 3.....14 50
" No. 4.....15 00
" No. 5.....16 00
" No. 6.....17 00
" No. 7.....18 00
" No. 8.....19 00
" No. 10.....22 00
Crane's Polished, No. 5.....14 00
" No. 6.....15 00
" No. 7.....16 00
" No. 8.....17 00
Crane's Black Coal, No. 4.....18 00
" No. 5.....18 50
Preston, Black Scoops, No. 1.....12 00
" No. 2.....12 50
" No. 3.....13 00
Half Pol. Scoops, No. 1.....13 00
" No. 2.....13 50
" No. 3.....14 00
Lippincott, Half Pol. No. 2.....16 00
" No. 3.....17 00

Wrenches.—Taft's.....dis 60 %
Coe's Imitation.....dis 45 %
Coe's Genuine.....dis 25 %

Wringers.—Novelty Clothes Wringer.....₱ doz $72 00
Universal Clothes Wringer.....72 00
Mead's.....55 00

Chicago Metal Market.

(Reported by Cragin Bros. & Co., 141, 143, and 145 Lake St.)

Tin Plate.

IC, 10x14, Coke	$13 50	IX, 14x20, Charcoal	18 50
IC, 10x14, Charcoal	14 50	IXX, 14x20	21 50
IX, 10x14, "	[illegible]	IXXX, 14x20	24 50
IC, 12x12, "	[illegible]	IXXXX, 14x20	27 50
IX, 12x12, "	[illegible]	IC, 100 Plate	29 00
IC, 14x20, "	15 00	DC	14 50
		DX	17 50
		DXX	20 50
		DXXX	23 50
IC, 14x20, Coke Roofing	14 00		
IX, 14x20, Charcoal Roofing	17 00		
IC, 20x28	29 00		
IX, 20x28	34 00		

Pig Tin.—Large.....43c | Small, 30 lbs.....44c
Bar Tin

Zinc.—In casks 1000 lbs.....11c | In sheets.....11½c
Slab.....9c

Copper.—Copper Bottoms.....40c
Sheathing Copper.....40c
Planished Copper, 14x48.....46c
" 14x52, 14x56, 14x60.....48c | Planished Copper.....45c

Braziers' Sheets, 30x60, | 15 to 100 lbs.
10 and 12 lbs. | Ingot Copper
| Bolt.....50c

Solder.—Extra Fine, C. S. & Co.'s Brand.....37c | Ordinary, No. 2.....23c
Fine, No. 1 | Plumbers' Solder.....28c
| Braz'rs or Spelt'r Solder 45c

Antimony.....30c
Babbit Metal.....15c. @ 25c.

Galvanized Iron Conductor Pipe.....₱ lb 10c

Sheet Iron.—

	Common.	Smooth.	Charcoal.
No. 14 to 24	6½c	7¼c	8¾c
25 & 26	6⅝c	7½c	9 c
27	7 c	7¾c	9¼c

Add ¼c ₱ lb for 30 in. wide.

Galvanized Iron.....dis 20 %
No. 16 to 20.....15c | No. 27.....18c
21 to 24.....16c | 28.....20c
25 & 26.....17c

Russia Iron.—
Perfect, 9 and 10.....22c | Perfect, 11, 12 and 13.....20c
| In Sheets, 1c. higher.

Lead.—
Pig.....8½c | Lead Pipe, in full coils 10½c
Bar.....10c | Lead Pipe, when cut.....11c
| Sheet Lead.....10½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.—Armitage.....₱ lb, gold, 13c
Peter Wright's.....14½c
Wilkinson's.....12½c

Apple Parers.—Conqueror.....₱ doz, $9 00
Lightning.....9 00
Turn Table.....9 00

Augers and Bits.—Cook's.....dis 25 %
Ives'.....dis 20 %
Jennings'.....dis 5 %
Snell's.....dis 12½ %

Axes.—Hunt's.....₱ doz $14 50 @ 15 50
Lippincott's.....14 00 @ 15 00
Lippincott's Pioneer.....14 50 @ 15 50
Simmons'.....13 50 @ 14 50

Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles.....dis 10 %
Swelled Taper Axles.....dis 10 %
Concord Axles.....dis 10 %
Red Jacket Axles.....dis 10 %
Common Axles, 1½ inch and upward.....₱ lb, 8¼c
" " less than 1½ inch.....9¼c

Bells.—Troy, Church.....₱ lb, 50c
Light Brass, Hand.....dis 50 %
Moore's, Cow.....dis 10 %

Bolts.—Arms, Bell & Co.'s Machine.....dis 10 %
Arms, Bell & Co.'s Carriage and Tire.....dis 60&15 %
Norway Iron Carriage and Tire.....dis 45&5 %
Cast Iron Barrel, Shutter, &c.....dis 25 %

Cast Butt Hinges.—Narrow Fast Joint.....dis 15 %
Broad Fast Joint.....dis 30 %
" Loose ".....dis 40 %
Reversible.....dis 40 %
" Japanned and Silver Tipped.....dis 40 %
Loose Joint "Acorn".....dis 35 %
" " Japanned.....dis 25 %
Excelsior Reversible Blind.....dis 30&10 %
Lull & Porter's Blind.....dis 35 %

Wrought Butts.—Narrow.....dis 10 %
Reversible.....dis 15 %
Broad.....dis 15 %
Table Hinges.....net list
Back Flaps.....net list
Inside Blind Hinges.....net list

Casters.—Porcel'n Wheel Bed or Plate..rev. list dis 15 %
Iron or Brass Wheel Bed or Plate

Chain.—Eng. Coil..3-16 ¼ 5-16 ⅜ 7-16 ½ in.
15 12½ 11¾ 11 10½ 10c gold
Trace.....6½-10-2 75c "
7-10-2 80c "
German Coil and Halter.....new list add 25 %

American Coil—Short Link.

Size, inches	⅜	7-16	½	9-16	⅝	
Price cents ₱ lb	12¾	12½	10½	10	9½	net
Size, inches	11-16	¾	13-16	⅞	15-16	
Price, cents ₱ lb	9½	8¾	8⅜	8⅛	8⅜	net
Size, inches	1	1 1-16	1⅛	1 3-16	1¼	
Price, cents, ₱ lb	8¼	8⅛	8	7⅞	7⅞	net

All larger sizes same price as 1¼ in. Stud chain 1c less than same size close link.

Chisels.—Socket, Firmer or Framing.....dis 55 %

Clothes Wringers.—Colby's.....₱ doz $66 00
Novelty.....72 00
Universal.....72 00
Monitor.....72 00

Coffee Mills.—Parker's.....net list
P. S. W. & Co.'s.....dis 5 %

Corn Knives.—Dunn E'ge T'ol Co.'s Clip..₱ doz $5 75
Disston's.....5 75

Crow Bars.—Steel Pointed.....₱ lb 8 @ 10c
Solid Cast Steel.....20c

Cutlery.—J. Russell & Co.'s
Lamson, Goodnow & Co.'s.....new list, dis 15 %
Landers, Frary & Clark's

Files and Rasps.—
Nicholson's Mill Files.....$5 50 to the £, currency
Nicholson's Other Files.....5 00 to the £, currency
Butcher's Files.....7 00 to the £, currency
Heller's Horse Rasps..$10 00 to the £, currency, dis 40 %

Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks.....dis 25 %
" " Handled Hoes.....dis 20 %
" " Planter Eye Hoes.....add 20 %
Winsted's Planter Eye Hoes.....add 20 %

Hammers.—Yerkes & Plumb.....new list net
Masons' Hammers.....₱ lb 20c
Smith Hand Hammers.....22c

Handles.—Axe.....Extra. No. 1. No. 2. No. 3.
$2·75 $2·25 $1·75 $1·00
Pick.....Extra. No. 1. No. 1½. No. 2.
$2·50 $2·00 $1·75 $1·25
Smith & Montross Fork, Hoe and Rake.....dis 10 %
" " Broom and Mop.....$12 @ $18 ₱ M.

Harrow Teeth.—1 inch iron.....₱ lb 6c
¾ and ⅞ inch iron.....6c
⅝ inch iron.....6½c
Barbed or Headed.....½c extra

Hatchets.—Hunt's.....add 5 %
Simmons'.....dis 5 %

Hay Knives.—Lightning.....₱ doz $24 00
Dunn Edge Tool Co.'s.....₱ doz $14 50—dis 10 %
Fisher's.....16 50—dis 10 %

Hinges.—Strap and T—St. Louis make.....dis 10 %

Horse Nails.—Eureka.....23c rates
Ausable.....22c "
Northwestern.....22c "
Eagle.....19c "
National Patent Pointed.....21c "
" " " Extra Finished.....22c "

Horse Shoes.—R. I. (Perkin's pat.).....₱ keg $7 00
Burden's.....7 00
Mule Shoes.....$1 00 extra
Rhode Island Trotting Shoes.....2 50 "

Locks and Latches.—Jones & Nimick s.....dis 33⅓ %
Moorhead, Adams & Co.....dis 35 %
Norwalk Lock Co.'s revised list.....dis 33⅓ %

Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks.....₱ doz. $15 00 @ 16 00
" Grub Hoes, Oval Eye.....₱ doz. 12 00 @ 13 00

Nails.—Wheeling.....$5 00 rates.
Orders for 100 kegs 12½c ₱ keg less.

Picks.—Klein, Logan & Co.'s R. R. and Clay ₱ doz.$12 00
Klein, Logan & Co.'s Coal.....9 75
" " Poll.....12 00
" " Stone.....16 50
" " Tamping.....19 00

Planes.—Ohio Tool Co.'s.....net list
Eastern.....dis 5 %

Post Hole Augers.—Clark's Patent—
No. 1, ₱ doz. $27; No. 2, $30; No. 3, $32.....dis 20 %
Barton's Patent.....₱ doz $25—dis 20 %
Vaughn's ".....25—dis 10 %

Sad Irons.—Monitor Brand, Silver Polished.....₱ lb 6c

Sash Weights.—Standard Solid Eyes.....₱ lb 3½c

Saws.—Disston's.....dis 5 %
Spear & Jackson's.....$5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s.....dis 10 %
Branch, Crooks & Co.'s.....dis 10 %
Livingston's Patent Buck.....net list

Screws.—American Screw Co.'s revised list..dis 42½ %
$2000 worth in 6 months.....2½ % extra

Scythes.—Blood's C. S. & G. S.....net list
Dunn Edge Tool Co.'s, Factory List.....dis 15 %
Paris Furnace Co.'s.....dis 20 %
Waldron's English.....$10 00 to £

Scythe Stones.—No. 1 Ind'n Pond ₱ gr's, $7 00
Extra Indian Pond.....7 50 } dis 25 %
Premium.....9 50
Diamond Grit.....13 50

Shovels, Spades and Scoops.—Ames'..add $1 to list
Lippincott's.....new list net
Rowland's, Maxwell.....revised list net

Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.....₱ lb, 17c
Solid Cast Steel.....35c
Striking Sledges.....₱ lb extra, 1c

Snaths and Cradles.....dis 20 %

Springs.—Cleveland Spring Co.'s—
Carriage and Express.....dis 5 %
Blue Seat Springs.....new list dis 10 %

Tacks.—Norway Tack Co.'s ½ weight.....dis 67½ %
Brads.....dis 50 %

Traps.—Newhouse Patent.....dis 12½ %
Reichard's Animal, Wood Bottom.....₱ doz $10 00
" " Metal Bottom.....12 00

Vises.—Solid Box.....₱ lb 18c
Wilson Mfg. Co.'s.....dis 15 %

Wrenches.—Coes' Genuine.....dis 25 %
Coes' Pattern.....dis 40 %
Taft's.....dis 50 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Charcoal	$14 50	IX, 20x28, Terne	$33 00
IX, 10x14, "	17 50	IC, continuous, 20 in. x 200 ft.	27 00
IC, 12x12, "	15 00	IX, continuous, 20 in. x 200 ft.	34 00
IX, 12x12, "	18 00	IC, 10x14, best Coke	13 50
IC, 14x20, "	15 50	IC, 10x14, good "	13 00
IX, 14x20, "	18 50	IC, 10x20	21 00
IC, 14x20, Terne	14 00	IC, 14x20	13 50
IX, 14x20, "	16 00		
IC, 20x28, "	29 00		

Block Tin.
Large Pigs.....42c | Bars.....44c
Small.....43c

Sheet Zinc.
Casks.....₱ lb 11c | Sheet.....₱ lb 11½c

Solder.
No. 1, Refined, in bars or plate.....25c
No. 2, " ".....23c
Pig Lead.....8½c

Sheet Copper.—16 to 100 lbs. Sheets 30x60.....40c
14 to 16 lbs., Sheets 30x60.....42c
10 to 12 lbs., " and 30x72.....45c
6 to 9 lbs., ".....49c

Tinned, 14 and 16 oz. 14x48.....38c
Planished, 14 and 16 oz. 14x48.....46c
" No. 7, 8 and 9.....48c
Copper Bottoms.....40c

Sheet Iron.—

	Com'n.	Sm'th.	Char'l.	Jun.
No. 16 to 20	6c	7½c	8¾c	
No. 22 to 24	6¼c	7½c	8¾c	
No. 26	6½c	7¾c	9c	11½c
No. 27	6¾c	8c	9¼c	11¾c

Galvanized Iron.....dis 20 %
Iron Rivets.....dis 15&20 %
Iron Wire.....dis 15 %
Coppered Pail Bail Wire.....dis 5 %
Copper Rivets and Burs.....dis 10 %
Russia Iron.—Nos. 9, 10, 11 and 12, ₱ lb.....21c
No. 1, stained, ₱ lb.....20c
Imitation Russia, ₱ lb.....15

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal
IC, 10x14.....$13 75
IX, 10x14.....16 50
XX, 10x14.....19 25
IC, 12x12.....14 25
IX, 12x12.....17 00
IC, 14x20.....14 75
IX, 14x20.....17 50
XX, 14x20.....20 25
XXX, 14x20.....23 00
XXXX, 14x20.....25 75
DC, 100 Plate.....13 25
DX, ".....16 00
DXX, ".....18 75
DXXX ".....21 50
DXXXX 100 Plate.....24 25
IX, 14x14.....25 25
IC, 10x14 W.....13 25
IX, 10x14 W.....16 00

Roofing Tin.—Best Char.
IC, Terne, 14x20.....$12 75
IX, " 14x20.....15 50
IC, Terne, 20x28.....27 00
IX, " 20x28.....31 00

Coke Tin.—
IC, 10x14 Coke.....$12 75
IX, 10x14, Coke.....15 50
IC, 14x20, ".....13 75

Copper.—
Sheathing.....38c
Copper Bottoms.....40c

Planished Copper.—
Sheathing, 14x48.....46c
Boiler Size, No. 7.....48c
" " No. 8.....48c
" " No. 9.....48c

Pig Tin.—
Large Pigs.....40c
Small Pigs.....41c
Bars.....42c

Solder.—No. 1.....22 c
No. 2.....20c

Bright Wire.....dis 25 %

Sheet Iron.—
No. 18 Am. Com.....6½c
No. 24 Am. Com.....6¾c
Pat. Am. Russia "A,"
Nos. 24, 25 & 26.....14c
Russia No. 9, 10, 11&12. 21½c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $7 25
" 21 to 24.....7 45
" 25 & 26.....7 65
" 21 to 24 Char'l..8 95
" 25 & 26 ".....9 15

Sheet Zinc.—Any width.....11c

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers of Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$14·00 @ $15·00
I. C. 10x14 best Coke.....13·00 @ 14·00
I. C. Terne, 14-20.....1[illegible]·50 @ 15·50
I. C. " 20-28.....26·00 @ 28·00
I. C. Continuous.....28·00

Pig Tin.—
Banca.....₱ lb 47c | Straits.....lb ₱ 42c
| English.....42c @ 43c

Solder.—
S. & Co.....₱ lb 28c | A 1.....₱ lb 25c
| Roofing.....24c

Lead.—Pig..₱ lb 7½c @ 8c. | Bar.....₱ lb 8c @ 9c

Copper.—
Ingot.....₱ lb 31c @ 33c | Brazier, 6 to 9 lb...₱ lb 46c
Planished... " 51c @ 53c | " 10 to 14 lb... " 43c
Sheathing.. " 44c @ 46c | " 14 to 100 lb.. " 40c
Bolt..... " 40c | Copper Bottoms... " 45c

Zinc.—Cask, 500 to 1000 lbs.....₱ lb 11½c
Case, 100 lbs.....11¾c
Slab.....8½c @ 9c

Brass.—
Roll, No. 6 to 30, ₱ lb 45c | Roll, No. 38 to 40...₱ lb 50c
" 30 to 38. " 65c | Wire, No. 0 to 20...₱ lb 50c
| " 20 to 25... " 60c

Babbit Metal.—
Sellew & Co.....₱ lb 35c | Black Lead.....₱ lb 25c
| Market.....15c

Antimony.....₱ lb 22c
Bismuth.....₱ lb $6 00
Nickel.....₱ lb $3 50

Pig Iron.—

HOT BLAST CHARCOAL PIG.

Hanging Rock, No. 1.....$55 00 @ $
" " No. 2.....52 00 @ 53 00
" " Forge.....45 00 @ 46 00
Tennessee, No. 1.....54 00 @ 55 00
" Forge.....44 00 @ 45 00
Alabama, No. 1.....55 00 @
Missouri, No. 1.....55 00 @
" No. 2.....53 00 @ 54 00

HOT BLAST STONE COAL PIG.

Missouri, No. 1.....$55 00 @ $
" Forge.....43 00 @ 44 00
Ohio, No. 1.....53 00 @ 54 00
" Forge.....43 00 @ 44 00
Scotch Pig, No. 1

COAL BLAST CHARCOAL.

Hanging Rock, Car Wheel.....$62 00 @ $67 00
Missouri, Car Wheel.....60 00 @ 62 00
Red River, ".....60 00 @
Tennessee, ".....60 00 @ 62 00
Alabama, ".....60 00 @ 62 00
Blooms.....115 00 @ 120 00

Sheet Iron.—
Russia.....₱ lb 20c @ 22c | Am Russia A..₱ lb 14 @ 15c
| " " B.. " 13 @ 14c

	Com. B.	Smooth Fin. S. L. U.	Smooth D. Re'fd.
15 to 20	6·0c	7·5c	9·0c
22 to 24	6·2c	7·8c	9·2c
26	6·4c	8·0c	9·4c
27	6·6c	8·2c	9·6c

Galvanized Iron.—Full bundles.....dis 20 %
Nos. 18 to 20.....15c | No. 27.....18c
22 to 24.....16c | 28.....20c
25 to 26.....17c

Bar Steel.—Silver, ₱ lb 21c; Crescent, 17½c.
Iron Wire.....dis 15 %
Enameled Ware.....dis 33⅓ %

One Piece Corrugated Elbows.—

Charcoal Iron.		Russia Iron.	
4½ inch.....₱ doz	$3·75	4½ inch.....₱ doz	$8·00
5 "	4·25	5 "	10·00
5½ "	5·25	5½ "	13·00
6 "	5·25	6 "	13·00
7 "	6·50	7 "	14·00

Leader Elbows—Flat Crimp Retinned.—

	₱ doz.		₱ doz.
2-inch	$2 00	2½-inch	$2 25
3-inch	2 50	3½-inch	3 00
4-inch	3 50	4½-inch	4 00

Sheet Iron Bread Pans.....₱ lb 13c
American Broilers.....₱ doz, $13·50
Tinmen's Machines.....net list
Sad Irons.....₱ lb, 5½c
Brass Kettles.—Ansonia.....48c

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.*
Copper—₱ ton.						
Best Selected	96	0	0	100	0	0
Tough Cake & Tile	92	0	0	95	0	0
Sheathing and Sheets	98	0	0	105	0	0
Bolts	100	0	0	103	0	0
Bottoms	100	0	0	107	0	0
Old (Exchange)	84	0	0	—		
Burra Burra	90	0	0	91	0	0
Wire.....₱ lb.	0	1	1⅛	—		
Tubes....."	0	1	0⅝	0	1	1
Brass—₱ lb.						
Sheets	0	0	10	0	0	10½
Wire	0	0	10¼	—		
Tubes	0	0	11¼	0	0	11½
Yellow Metal Sheathing	0	0	9	0	0	9¾
Sheets	0	0	8¾	0	0	9½
Tin—₱ ton.						
English Blocks	134	0	0	135	0	0
Ditto Bars	135	0	0	136	0	0
Ditto Refined	137	0	0	0	0	0
Banca	135	0	0	137	0	0
Straits	134	0	0	—		
***Tin Plates**—† ₱ box.						
IC Charcoal.....1 qual.	2	2	0	2	5	0
IX ".....1 qual.	2	8	0	2	11	0
IC ".....2 qual.	1	18	0	2	2	0
IX ".....2 qual.	2	3	0	2	8	0
IC Coke	1	14	0	1	16	0
IX "	2	0	0	2	2	0
Canada Plates.....₱ ton.	24	10	0	26	0	0
" at works	24	0	0	25	0	0
Spelter—₱ ton.						
Foreign	27	10	0	28	0	0
To arrive	—			—		
Zinc—₱ ton.						
In Sheets	33	0	0	33	10	0
Iron—₱ ton.						
Bars Welsh, in London	12	12	0	13	0	0
" to arrive	12	10	0	13	0	0
Nail Rods	13	12	6	13	15	0
Nail Rods, Staff'd in L'ndon	14	0	0	15	0	0
Bars	14	5	0	16	10	0
Hoops	15	0	0	17	0	0
Bars at Works	13	5	0	15	0	0
Hoops ditto	14	0	0	16	0	0
Sheets, single	17	0	0	18	0	0
Pig, No. 1, in Wales	5	10	0	7	0	0
Refined metal ditto	7	0	0	8	0	0
Bars, common, ditto	12	10	0	12	15	0
Do, merchant, Tyne or Tees	12	15	0	13	0	0
Ditto, Railway, in Wales	11	10	0	13	0	0
Ditto, Swedish, in London	18	0	0	19	0	0
To arrive	20	0	0	21	0	0
Pig, No. 1, in Clyde	5	12	6	7	0	0
Ditto, f.o.b., Tyne or Tees	4	10	0	5	10	0
Ditto, Nos. 3, 4, f.o.b.	—			—		
Railway Chairs	5	5	0	6	0	0
" Spikes	12	10	0	14	0	0
Indian Ch'coal Pigs in L'don	10	0	0	12	0	0
Steel—₱ ton.						
Swedish, in kegs (rolled)	—			—		
Ditto (hammered)	20	0	0	22	0	0
Ditto, in faggots	—			—		
English, spring	23	0	0	25	0	0
Quicksilver—₱ bottle.	13	15	0	14	0	0
Lead—₱ ton.						
English Pig, common	23	15	0	—		
Ditto, LB.	23	15	0	24	0	0
Ditto, WB.	24	10	0	—		
Ditto, Sheet	25	0	0	25	5	0
Ditto, Red Lead	25	15	0	26	0	0
Ditto, White	30	0	0	32	0	0
Ditto, Patent Shot	26	15	0	27	5	0
Spanish	23	5	0	23	10	0

* At the works, 1s. to 1s. 6d. per box less. Terne Plates 6s. per box below Tin Plates of similar brands. † Add 6s. to each X.

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OF VARIOUS GRADES.

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XX Metal Nickel Hardening	50 cts. ℔ ℔	E		20 cts.
X Metal Copper Hardening	45 cts. ℔ ℔	F		18 cts.
" " "	40 cts. ℔ ℔	G	These metals are the ordinary low priced Babbitt alloys, used where there is not much wear on the machinery, and where economy is required.	16 cts.
B " " "	35 cts. ℔ ℔	H		14 cts.
C " " "	30 cts. ℔ ℔	I		1 cts.
		J		12 cts.

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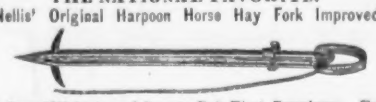

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Each are put to a test of 2000 lbs. before shipping. Their equal is not in the market: *i. e.* for economy, durability and convenience.

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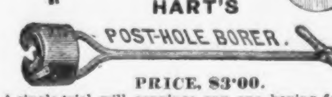

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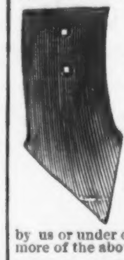

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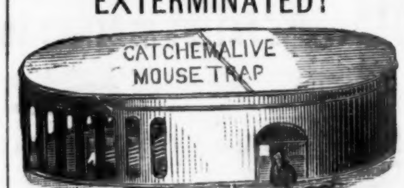

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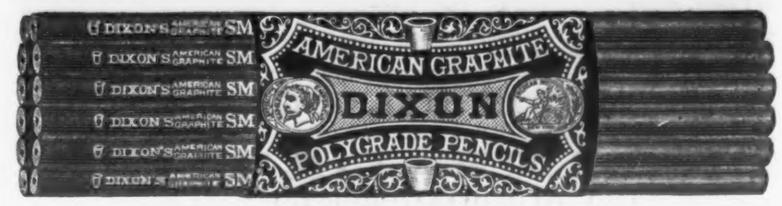

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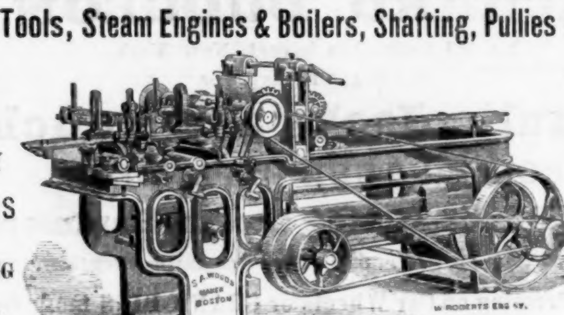

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